TM H Copy

VIA TELEFAX

TO: Randy Lutter, OMB FAX 395-7285 (202) 395-5129

FROM: Tom Hagler, EPA-9

RE: EPA Water Quality Criteria in California Bay/Delta

DATE: December 9, 1994

This memorandum will summarize our call from this morning.

(1) Additional paragraph on the consensus process

The following paragraph will be added to page 21 (11/17 version) in the preamble, immediately before part B:

> EPA is aware of efforts by urban and agricultural users, in cooperation with environmental groups, to identify alternative standards that may meet the requirements of the CWA. EPA encourages affected parties to continue to work with EPA and the State to develop proposals that meet the requirements of the CWA. EPA would welcome the adoption by the State of a revised plan based in whole or in part on such private proposals provided that it complies with the requirements of the CWA.

(2) Addition of a three-year moving average to Fish Migration criteria

Language will be added to both the rule and the preamble that measures compliance with the Fish Migration criteria by use of a three-year moving average.

[All page numbers refer to OMB submission version 11/17]

[Add to carryover paragraph of p. 169 in rule language and also to the end of the first full paragraph on p. 171]:

....These criteria will be considered attained when the sum of the differences between the measured experimental value and the stated criteria value (i.e., measured value minus stated value) for each experimental release conducted over a three year period (the current year and the previous two years)

shall be greater than or equal to zero.

[Add to carryover paragraph of p. 94 and again to end of second full paragraph on p. 105 in preamble text]:

....EPA recognizes that there may be substantial variation in fish migration criteria values resulting from these experimental releases. Accordingly, the final rule provides that attainment can be measured using a three-year moving average (the current year and two preceding years). Three year periods should provide time to complete sufficient releases to determine whether the implementation measures are, on average, attaining the stated criteria values.

(3) Elimination of surplus language in Fish Migration criteria

Paragraph (3)(B)("Measuring San Joaquin Valley unimpaired runoff") on the last page of the rule will be revised as follows:

(a) The parenthetical in the first sentence of text shall be deleted, and

(b) The last two sentences shall be deleted.

(4) Sacramento Fish Migration: Measuring Temperature AT RELEASE

As I said on the phone, the 11/17 version corrects the "disconnect" you noted in the Sacramento Fish Migration. Namely, the final rule should compute the Sacramento Fish Migration values based on water temperature at release during the experiment. I'm including some pages from the 11/17 version that reflect this correction.

high and very low temperatures, so the criteria must specify a ceiling on the index values at low temperatures and a floor for high temperatures. Incorporation of these conclusions and comments leads to Fish Migration criteria of at least the following:

At temperatures below 61°F:
SRFMC = 1.35

At temperatures between 61°F and 72°F:
SRFMC = 6.96 - .092 * Fahrenheit temperature

At temperatures above 72°F:
SRFMC = 0.34

In all cases, water temperature is measured as the temperature at release of tagged salmon smolts into the Sacramento River at Miller Park.

These final criteria are shown in Figure 5. Note that the "ceiling" and "floor" values in the final rule differ somewhat from those included in the documents made available in EPA's Notice of Availability (59 FR 44095). The changes were made to correct computational errors in evaluating the applicable "continuous function" values for the 61°F and 72°F ceiling and floor levels.

[INSERT FIGURE 5]

(IV) *Implementation*. On the Sacramento River, the criteria provide survival goals that vary based on the water temperature

at the time of release of the tagged salmon smolts. EPA believes that the implementation plan developed by the State Board should provide for a sufficient number of fish releases each year to determine whether the criteria are being attained over a representative range of temperature conditions.

The State Board may consider using the USFWS Sacramento smolt survival model (that is, the model underlying the criteria index equations) to predict measures necessary to attain the criteria. There are a number of base conditions underlying both the tagged-fish release experiments and the USFWS models. For example, USFWS recommended a base Sacramento River flow to ensure that overall conditions do not deteriorate. The State should protect these base conditions as it develops an implementation plan.

Monitoring attainment of these criteria should focus on both within-year measures and across-year comparisons. During each year monitoring of salmon smolt survival should occur throughout the months of April, May and June with particular emphasis during times of temperature change or at times of change in water project operation. It is likely that this monitoring will reveal a large variability in survival at different times and under different conditions within each year. EPA anticipates that at the time of the next triennial review enough monitoring data over a range of temperatures will be available for a preliminary

These criteria are displayed graphically in Figure 6.

(IV) *Implementation of San Joaquin River Fish Migration Criteria*.

The following discussion is intended to assist the State Board's consideration of the issues involved in implementing these or similar, equally protective, criteria.

The San Joaquin River Fish Migration criteria provide an annual survival goal that varies depending on the ~~60-20-20~~ San Joaquin ~~water year in~~dex. EPA anticipates that the State Board implementation plan would provide for a sufficient number of tagged fish releases to verify that the applicable criterion is being met in each year.

Valley Index

As stated above, the USFWS model is the best available model of salmon smolt survival through the Delta, and EPA encourages the State Board to use the recently revised USFWS San Joaquin model as guidance for setting implementation measures. Nevertheless, it is important to recognize that there may be constraints on the model's use. Further monitoring and experimental releases under the chosen implementation regime are essential to verify and refine the model, and will ensure that the smolts are actually surviving at the expected level. In addition, it will be particularly important to protect the base conditions assumed in the model, such as flows during the time the barrier is not in

(2) *Fish Migration Criteria.*

(i) *General rule.*

(a) *Sacramento River.* Measured Fish Migration criteria values for the Sacramento River shall be at least the following:

At temperatures less than below 61°F:
SRFMC = 1.35

At temperatures between 61°F and 72°F:
SRFMC = 6.96 - .092 * Fahrenheit temperature

At temperatures greater than 72°F:
SRFMC = 0.34

SRFMC is the Sacramento River Fish Migration criteria value. Temperature shall be the temperature at release of tagged salmon smolts into the Sacramento River at Miller Park.

(b) *San Joaquin River.* Measured Fish Migration criteria values on the San Joaquin River shall be at least the following:

For years in which the SJVIndex is > 2.5:
SJFMC = (-0.012) + 0.184*SJVIndex

In other years: SJFMC = 0.205 + 0.0975*SJVIndex

where SJFMC is the San Joaquin River Fish Migration criteria value, and SJVIndex is the San Joaquin Valley Index in million acre feet (MAF)

(ii) *Computing fish migration criteria values for Sacramento River.* In order to assess fish migration criteria values for the Sacramento River, tagged fall-run salmon smolts will be released into the Sacramento River at Miller Park and captured at Chipps Island, or alternatively released at Miller Park and Port Chicago and recovered from the ocean fishery, using the methodology described below. An alternative methodology for computing fish

migration criteria values can be used so long as the revised methodology is calibrated with the methodology described below so as to maintain the validity of the relative index values. Sufficient releases shall be made each year to provide a statistically reliable verification of compliance with the criteria.

Fish for release are to be tagged at the hatchery with coded-wire tags, and fin clipped. Approximately 50,000 to 100,000 fish of smolt size (size greater than 75 mm) are released for each survival index estimate, depending on expected mortality. As a control for the ocean recovery survival index, one or two groups per season are released at Benecia or Pt. Chicago. From each upstream release of tagged fish, fish are to be caught over a period of one to two weeks at Chipps Island. Daylight sampling at Chipps Island with a 9.1 by 7.9 m, 3.2 mm cod end, midwater trawl is begun 2 to 3 days after release. When the first fish is caught, full-time trawling 7 days a week should begin. Each day's trawling consists of ten 20 minute tows generally made against the current, and distributed equally across the channel.

The Chipps Island smolt survival index is calculated as:

$$SSI = R + MT(.007692)$$

maintains a port sampling program.

(iii) *Computing fish migration criteria values for San Joaquin River.* In order to assess annual fish migration criteria values for the San Joaquin River, tagged salmon smolts will be released into the San Joaquin River at Mossdale and captured at Chipps Island, or alternatively released at Mossdale and Port Chicago and recovered from the ocean fishery, using the methodology described below. An alternative methodology for computing fish migration criteria values can be used so long as the revised methodology is calibrated with the methodology described below so as to maintain the validity of the relative index values. Sufficient releases shall be made each year to provide a statistically reliable estimate of the SJFMC for the year.

Fish for release are to be tagged at the hatchery with coded-wire tags, and fin clipped. Approximately 50,000 to 100,000 fish of smolt size (size greater than 75 mm) are released for each survival index estimate, depending on expected mortality. As a control for the ocean recovery survival index, one or two groups per season are released at Benicia or Pt. Chicago. From each upstream release of tagged fish, fish are to be caught over a period of one to two weeks at Chipps Island. Daylight sampling

W2 Patrick

ENVIRONMENTAL DEFENSE FUND

California Office
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Oakland, CA 94618
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Fax: 510-658-0630

December 19, 1994

RECEIVED
DEC 21 1994
Water Management Division
U.S. EPA, Region 9

Hon. Bill Clinton
President of the United States
The White House
1600 Pennsylvania Avenue
Washington, DC 20500

Dear President Clinton:

I write on behalf of the Environmental Defense Fund to congratulate you and various members of your Administration for the historic water accord which was announced last Thursday in California. The accord will make an important difference for the protection and restoration of California's fish and wildlife, but not at the unnecessary expense of other competing interests in the state.

Many persons in government and outside of it deserve credit for this achievement, but your involvement was obviously critical. Without your encouragement for achieving consensus among a wide variety of interested participants, the accord would not have been possible.

Sincerely yours,

Thomas J. Graff
Senior Attorney

cc: Hon. Bruce Babbitt
Hon. Ron Brown
Hon. Carol Browner

TJG:mjg

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DEC 28 1994

Mr. Barry Nelson
Coordinator
Share the Water
1736 Franklin Street, Suite 300
Oakland, CA 94612

Dear Mr. Nelson:

Thank you for your letter of December 8, 1994 concerning the allocation of water for fish and wildlife purposes as mandated by the Central Valley Project Improvement Act.

I have forwarded your letter to Mr. Patrick Wright of the Environmental Protection Agency's (EPA) regional office in San Francisco for consideration. Our regional office and the U.S. Fish and Wildlife Service were responsible for the recent action affecting the San Francisco Bay and Sacramento-San Joaquin Delta.

Sincerely yours,

Robert Perciasepe
Assistant Administrator

cc: PatricK Wright, Region 9

prepared by DSABOCK:mst:SASD:4305:260-1315:12/22/94:OW-94-0804

CONCURRENCES								
SYMBOL	SB		OST					
SURNAME	SABOCK	Sutherland	DAVIES					
DATE	12/22/94	12/22	12/24/94					

0W0W-A

Share the Water

A Coalition for Federal Water Reform

1736 Franklin Street, Suite 300
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(510) 452-9261 • FAX (510) 452-9266

December 8, 1994

Robert Perciasepe
Assistant Administrator
Environmental Protection Agency
401 M Street SW
Washington, DC 20460

Dear Assistant Administrator Perciasepe,

We understand that the U.S. Fish and Wildlife Service (Service) will soon be making an announcement regarding the allocation of water for fish and wildlife purposes, as mandated by the Central Valley Project Improvement Act (CVPIA, or "Act".) We believe this decision will have a significant impact on the health of the San Francisco Bay and Sacramento - San Joaquin Delta estuary and on the prospects for a devastated commercial fishing industry. We respectfully request your assistance in ensuring that this decision is based on scientific evidence, on the needs of the ecosystem and on the legal requirements stated in the Act.

The first purpose of the CVPIA is to "protect, restore, and enhance fish, wildlife and associated habitats in the Central Valley..." The Act specifically sets the goal of doubling the population of naturally reproducing anadromous fish. Recognizing that meeting these goals would require a specific allocation of water, Congress included a mandate in the Act to allocate 800,000 acre-feet (AF) of water annually for fish and wildlife purposes. We strongly believe that the appropriate allocation of this water is of fundamental importance to the successful implementation of the Act.

We are concerned that the Service is getting pressure to allocate this water in a way that would clearly be in violation of the letter and the spirit of the Act. Attached you will find a recent letter to Interior Secretary Babbitt from Congressman George Miller and Senator Bill Bradley, the authors of the Act. We believe this letter accurately reflects the intent of the Act's 800,000 AF provisions.

As the letter describes in detail, the Act clearly states that the primary purpose of the 800,000 AF is to meet the fish and wildlife restoration goals of the Act. Any attempt to use the 800,000 AF primarily for other purposes, including meeting water quality standards for the bay/delta and meeting the habitat needs of endangered species, would be in violation of the law. While it is possible that some of the 800,000 AF allocation will also meet the needs of these other laws, the primary objective of this allocation must be the CVPIA's anadromous fish doubling plan. Ignoring this intent of the law could render this key provision meaningless.

The signing of the CVPIA into law was a major step forward for federal water policy in California. The broad coalition of commercial fishery groups, businesses, environmental groups, labor union and cities that supported the Act's passage recognized the acute need for significant reform in the management of the Central Valley Project. Our devastated commercial fishing industry and the many endangered and threatened species that rely on this ecosystem now have hope for a better future. The correct allocation of the 800,000 AF is simply a necessity if this reform is to succeed. We hope you will do all you can to ensure that this allocation is made properly, using the guidelines outlined in the attached letter from the Act's authors.

Thank you for taking the time to consider our position. We look forward to continuing to work with you on the implementation of the CVPIA. Do not hesitate to contact us to discuss Share The Water's position on any of the Act's provisions.

Sincerely,

Barry Nelson
Coordinator

Daniel Olias Silverman
Campaign Director

Attachment: Letter to Interior Secretary Babbitt, June 21, 1994

cc: Congressman George Miller
Senator Bill Bradley

Congress of the United States

Washington, DC 20515

June 21, 1994

The Honorable Bruce Babbitt
Secretary of the Interior
Washington, D.C. 20240

Dear Mr. Secretary:

It has come to our attention that you have received a letter dated May 24, 1994 from Representatives Dooley, Lehman, and Condit regarding the management of Central Valley Project (CVP) water for fish and wildlife purposes.

In question is the 800,000 acre-feet (AF) of annual CVP yield identified in section 3406 of the Central Valley Project Improvement Act (CVPIA, P.L. 102-575). The manner in which this water is managed is fundamentally critical to the success or failure of CVPIA implementation. Unfortunately, the May 24 letter from Representatives Dooley, Lehman, and Condit misconstrues the directives in the CVPIA governing water for fish and wildlife.

The CVPIA clearly provides that the 800,000 acre feet (AF) of dedicated yield is to be used primarily for fish, wildlife and habitat restoration to meet the CVPIA's fish doubling goal. Two additional, but secondary, purposes of the 800,000 AF are to assist the State of California in meeting new Bay/Delta water quality standards, and to help meet other new obligations that may be imposed on the CVP following enactment of the CVPIA.

Representatives Dooley, Lehman and Condit argue that "Congress intended that all of the CVP water used for endangered species and Delta water quality standards, together with water for CVPIA programs and projects, should be credited against the 800,000 AF obligation." This assertion flies in the face of the plain language of the statute. Moreover, their attempted reliance on selective legislative history to alter the meaning of section 3406(b)(2) runs counter to conventions of statutory interpretation, which dictate that a statute's plain meaning govern its interpretation.

provided from the quantity of water dedicated to fish, wildlife, and habitat restoration purposes under [section 3406(b)(2)]" and from supplemental water. Allocating the 800,000 AF primarily or exclusively to ESA purposes would be inconsistent with the requirements of section 3406(b)(1)(B).[2]

Congress recognized that the fish doubling program could well require more than 800,000 AF. In fact, earlier versions of the CVPIA dedicated 1.5 million AF to the primary purpose of fish doubling and fish and wildlife restoration. That is why the CVPIA authorizes the Secretary to purchase supplemental water with Restoration Fund monies. But nothing in the CVPIA indicates that Congress had any intention of burdening the Restoration Fund with purchasing water to meet the entire fish doubling obligation.

The fact that section 3406(b)(2) establishes fish and wildlife restoration as the primary purpose of the 800,000 AF is consistent with the CVPIA's purposes. Two of the Act's fundamental purposes, as articulated in sections 3402(a) and (b), are "to protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley" and "to address impacts of the Central Valley Project on fish, wildlife and associated habitats."

An additional purpose of the CVPIA is "to achieve a reasonable balance among competing demands for use of Central Valley Project water, including the requirements of fish and wildlife, agricultural, municipal and industrial and power contractors" (section 3402(f)). Before the CVPIA, the allocation of project water was unbalanced, with fish and wildlife needs almost entirely left out of the allocation equation. The "balance" that Congress sought to achieve in the CVPIA was to bring the needs of fish and wildlife into the equation, in part by dedicating CVP yield to their restoration.

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[2] Using the 800,000 acre feet to restore fish and wildlife and to double anadromous fish in Central Valley streams and rivers will help to prevent future ESA listings and, in that sense, will provide an additional benefit to all CVP beneficiaries.

the Act's fish and wildlife restoration purposes may not fully coincide with the purposes for which the State Water Resources Control Board might choose to establish water quality standards. For example, the Board may choose to establish increased Bay/Delta outflow requirements to achieve a particular salinity standard to benefit industrial or agricultural water users, or to protect brackish tidal marshes for reasons largely unrelated to the critical flow and water quality needs of anadromous fish. Under these circumstances, the water determined to be "needed" by the Board may well be different, in whole or in part, from the management prescription needed by the Fish and Wildlife Service to achieve this Act's fishery restoration objectives.

Read as Representatives Dooley, Lehman, and Condit would have it, the CVPIA is internally inconsistent, since in their view, sections 3402(f) and 3406(b)(1)(C) virtually prevent the dedication of the 800,000 AF to accomplish the goals of fish doubling and fish and wildlife restoration, goals which are clearly articulated in sections 3402(a) and (b), 3406(b)(1) and (b)(2). Such a reading of the CVPIA violates one of the principles of statutory interpretation, which holds that statutes should not be read in such a way as to be internally inconsistent.

In the second part of their letter, Representatives Dooley, Condit, and Lehman assert that water sold to contractors should be counted as part of the dedicated yield for fish and wildlife. Essentially they are arguing for a return to the pre-CVPIA era, when the only project water that benefitted fish and wildlife was water eventually diverted by a contractor, that might provide incidental benefits along the way. There is nothing in the statute to support their argument, which, taken to its logical extreme, would render section 3406(b)(2) meaningless.

Indeed, their reading is contrary to the common legal definition of "dedicate." Dedication, as used in the CVPIA and other federal statutes, limits the purpose for which the dedicated property, in this case the 800,000 AF, may be used. While the Secretary has discretion in managing the reallocated water, he or she has no discretion in deciding whether to dedicate it to fish and wildlife. As soon as the CVPIA was enacted, dedication occurred. After enactment, the 800,000 AF became unavailable for purposes other than restoring fish and wildlife and doubling populations of anadromous fish.

their new letter, they seek to interpret the law they oppose in so benign and ineffective a way as to minimize any benefit of the law to fish and wildlife. In short, while they are surely entitled to their views, few Members of Congress are as unsuited to interpretation of the intent and meaning of the CVPIA as the three who seek to influence your view.

In short, we urge that you implement section 3406(b)(2) so that 800,000 AF is dedicated and managed for the primary purpose of the CVPIA's fish, wildlife and habitat restoration goals, as the statute clearly requires.

Sincerely yours,

GEORGE MILLER
Chairman
Committee on Natural Resources
U.S. House of Representatives

BILL BRADLEY
Chairman
Subcommittee on Water and Power
Committee on Energy and Natural Resources
United States Senate

DRC

DELTA RESTORATION COALITION

UPDATE

February 1995

Assembly and Senate Organize

Following some highly partisan maneuvering, the Assembly announced committee assignments for all 26 policy committees. In keeping with the power sharing agreement instituted last week, both parties will have equal representation on all committees. The most important committee for the DRC is the Water Parks and Wildlife Committee. The make-up of the Committee is as follows:

Dominic Cortese (D-San Jose), Chair
Peter Frusetta (R-Tres Pinos), Vice Chair

Robert Campbell (D-Martinez)	Doris Allen (R-Cypress)
Sal Cannella (D-Ceres)	Jim Battin (R-La Quinta)
Denise Moreno-Ducheny (D-San Diego)	Keith Olberg (R-Victorville)
Dan Hauser (D-Arcata)	Charles Poochigian (R-Fresno)
Richard Katz (D-Panorama City)	Brian Setencich (R-Fresno)
Kevin Murray (D-Los Angeles)	BruceThompson (R-Fallbrook)

The Committee shapes up well with Cortese as Chair and a strong delegation from the Central Valley. Cortese has a solid understanding of the water supply "gridlock" in the Delta and Olberg's involvement in the building industry will also prove important. Poochigian should provide solid leadership from the ag community.

Meanwhile, the State Senate continued to organize itself, announcing the make-up of its Standing Committees. Of critical importance to DRC, the Senate Agriculture and Water Committee shapes up as follows:

Jim Costa (D-Hanford), Chairman
Ruben Ayala (D-Chino) Vice Chair

Charles Calderon (D-Montebello)	Quentin Kopp (I-SF)	Bill Craven (R-Oceanside)
Mike Thompson (D-Napa)		Maurice Johannessen (R-Redding)
		David Kelley (R-Hemet)
		Richard Monteith (R Modesto)
		Don Rogers (R-Bakersfield)
		Cathie Wright (R-Simi Valley)

The Committee shapes up well to achieve the necessary votes to advance a facilities fix for the ailing Delta. The Committee is the only one in the Senate with a Republican majority and has proven, pro-water development leaders in both Costa and Ayala. It was Ayala who carried the original Peripheral Canal legislation that was later overturned by voters in 1982.

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Legislative Effort Advances

DRC's legislative agenda took several steps forward in January. A delegation of DRC directors, including Chairman Geoffrey Vanden Heuvel, John Harris, Larry Turnquist, Jim Nickel, Kole Upton and Gary Conover met in Sacramento with Senator Jim Costa, the new Chairman for the Senate Ag and Water Committee to discuss the legislative outlook for a long-term solution to the ailing Delta. The DRC delegation was encouraged by Costa's willingness to move forward with a facilities fix. Costa also arranged for the group to meet with Senate President Bill Lockyer (D-Hayward), who reminded the group that Bay Area support for any long-term solution would be important.

Equally important, legislation will soon be introduced that will include a long-term facilities fix for the Delta. **The legislature's bill introduction deadline is February 24th.**

Administration Poised for Quick Action

Recognizing the obvious short-term political opportunities, Wilson administration water policy officials are reportedly considering plans to speed-up the expected 3-4 year "long-term planning process" recently arranged with Clinton administration officials. While a final decision is not expected for several weeks, rumblings from Wilson administration officials indicate that a 1-year time-frame is favored. Most political observers view a 3-4 year timetable as "an excuse for inaction."

Fundraising / Coalition Building Advance

DRC's fundraising efforts are on-track, and the coalition building efforts are advancing. The DRC was recently invited to address the Legislative Committee of the California Building Industry Association (CBIA). The group was very receptive to the DRC's mission and recognized the pressures placed on their industry as water demand continues to outpace supply. The DRC has also opened channels of communication with leaders in the nursery and urban landscape industries

Media Coverage

Enclosed is an editorial from the Bakersfield Californian which chronicles the need for a facilities fix for California's chronic water problems, and calls for a reliable water supply for Californians south of the Delta.

Natural Heritage Institute

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Non-Profit Law and Consulting in Conservation of Natural Resources and the Global Environment

ry A. Thomas
President

SUMMARY AND ANALYSIS

THE PRINCIPLES FOR AGREEMENT ON BAY-DELTA STANDARDS BETWEEN THE STATE OF CALIFORNIA AND THE FEDERAL GOVERNMENT

SIGNED ON DECEMBER 15, 1994

David K. Fullerton
February 1995

On December 15, 1994, the state and federal governments, and major water users, and environmental groups announced an agreement on the Bay-Delta environmental standards that will govern the Bay-Delta Estuary over the next three years. The agreement is a major milestone in the history of California water management, representing as it does the first time that the major interests involved in California water management -- the state and federal governments, and the water user and environmental communities -- have agreed to implement a specific list of protective measures for the Estuary.

Much work remains. The Bay-Delta agreement solves neither the environmental problems in the Estuary, nor the very real water supply problems now experienced by many urban and agricultural agencies. Those problems will only be solved by much more fundamental changaes in California's plumbing and water management practices. But the agreement is a good start. Not only does the agreement provide significant environmental protections for the Estuary; equally important, it demonstrates clearly that when all sides work together in good faith, they can break through the gridlock and create workable solutions to California's water and environmental problems.

This document is an attempt to answer key questions about the December 15 agreement:

- What is in the agreement? Is it biologically protective? What are its strengths and weaknesses?
- What is the context of the agreement? Why did it take place when it did, the way it did?
- What happens now?

I. SNAPSHOT OF THE STANDARDS

The standards generally build upon the SWRCB's D1485 standards (set in 1978). Key elements are as follows:

- The standards will be implemented immediately by the federal government through the Endangered Species Act.
- The SWRCB will adopt the standards in March 1995 and will then begin a water rights process the determine responsibility for meeting the standards.
- Until the SWRCB finalizes responsibility for the standards, the state and federal projects will have sole responsibility for the standards.
- The standards are designed to satisfy all flow and diversion standards required by the federal government under the Clean Water Act and the Endangered Species Act. However, take limits will remain for listed species (winter run salmon and Delta smelt).
- Water supply impacts are expected to average 400 kaf/year on average, with impacts rising to 1.1 maf/year in critical years.
- The protections include:
  - Salinity standards for protection of estuarine habitat similar to those promulgated by EPA.
  - Significant reductions in Delta exports during the critical spring period (February - June).

- Increases in San Joaquin flows and reductions in export pumping to protect fall run San Joaquin salmon.
- Frequent closures of the Delta Cross Channel gate to keep downmigrating salmon from being swept into the Central Delta.
- Restrictions on the take of endangered species (implemented through USFWS and NMFS only).
- Real time operation of Delta pumps so that pumping is reduced below the standards when necessary to reduce environmental impacts and increased above the standards when higher pumping is safe.
- A $180 million fund designed to improve habitat conditions, through upstream restoration, screening intakes, and (possibly) the purchase of water.

The operational standards are given in tabular form as table 1. Other protections, such as take limits and the habitat improvement fund are discussed in the text. A map of the Delta which identifies key locations is also attached.

The agreement is attractive to the state and federal governments and to the water user and environmental communities:

- The environment will get state-endorsed standards in the Estuary sufficient (we hope) to stabilize populations.
- The federal government will be able to stand back and let the state take a greater role in water management.
- Urban and agricultural agencies will get much greater predictability in supply at a price they can afford.
- The agreement opens the door to adaptive management, which offers the potential of greater environmental protection without increased hits on water users.
- The agreement also opens the door to a new long-term planning process with the potential to provide for quantum leaps in environmental conditions and in urban and agricultural water supplies.

II. HISTORY OF BAY-DELTA ENVIRONMENTAL PROCESSES

Focussed efforts to achieve improvements in the environmental conditions in the Bay-Delta Estuary might be said to have begun in 1987 with the beginning of the so-called Bay-Delta Hearings, held under the auspices of the SWRCB. During those hearings, the Bay Area community presented strong scientific evidence demonstrating the decline of the estuarine environment and implicating both the reduction in fresh water flow through the Estuary and the impact of massive Delta diversions as a major cause of the decline.

The environmental community was so successful in its advocacy that in 1988, the SWRCB published a draft set of water quality standards requiring major increases in spring Delta outflow and major reductions in export pumping. The water user community, particularly the San Joaquin and Southern California water agencies dependant upon Delta exports reacted very negatively to the draft standards and they were quickly withdrawn.

In 1994, San Joaquin and Southern California export water agencies were in the vanguard

insisting that the SWRCB adopt a set of strong and comprehensive standards to protect the Estuary. On December 15, 1994, urban, agricultural, and environmental organizations, and the state and federal governments signed a dramatic agreement that not only promised strong Bay-Delta standards, but $180 million over three years for habitat restoration and modifications of water project operations on a daily basis to reduce the impacts of pumping.

The odyssey from firestorm to consensus resembles, in some ways, the plot line of the movie "Groundhog Day" in which the protagonist is doomed to repeating the same basic chain of events until he can get it right.[1] In any case, the key elements in the process can be summarized as follows:

■ The Three Way Process. Environmentalists met from 1991 through 1993 with agricultural and urban representatives in an effort to reach agreement on a program to meet the needs of each interest. The talks did not lead to specific actions, but did lay the conceptual foundations for the 1994 agreement. In essence, during the Three Way talks, most water users came to accept that the environmental problems in the Estuary are so severe that productive discussion on such issues as water development and Delta transfer would never occur until environmental conditions were stabilized. For this reason, the Three Way process developed a proposal for (1) immediate environmental improvements in the Estuary, linked to (2) a long-term planning process designed to improve conditions for water users and the environment. The linkage of immediate environmental benefits with long-term planning was the foundation for the Governor's water policy in 1992 and for a state-federal framework agreement in 1994.

■ The Governor's Policy. Governor Wilson published a water policy in 1992 which echoed the Three Way Program with the significant difference that he would be the "honest broker" for the agreement (substituting himself for elaborate safeguards to assure fairness written into the Three Way Proposal). Accordingly, the SWRCB began work on draft decision 1630 (D 1630) for immediate environmental improvement while the Bay Delta Oversight Council (BDOC), made up of urban, agricultural, and environmental representatives began a long-term planning process for the Estuary. The attempt almost succeeded. Both the urban and environmental communities gave guarded support to D 1630 and all sides supported the BDOC process. Nevertheless, on April 1, 1993 Governor Wilson asked the SWRCB to withdraw D 1630. The reasons for the Governor's decision were twofold:

1. The agricultural agencies dependant upon export water -- primarily Kern County Water Agency -- had decided that they did not wish to exchange the certainty of supply losses represented by D 1630 for the possibility of supply improvements promised by the BDOC process.
2. The federal government was now intervening in California water management under the ESA on behalf of both the winter run salmon and Delta smelt. Since the ESA protections were arguably more stringent than D 1630, Governor Wilson could, by withdrawing D 1630, place the blame for improved standards on the federal

[1] Tim Quinn of MWD first came up with this analogy, as best I can remember.

government.

What the Governor did not count on was that the environmental community would withdraw en masse from the BDOC process, thereby effectively eviscerating the second half of the Governor's policy. Moreover, by withdrawing from the field, the Governor had left the Federal government to control the Delta using the harsh rules of the ESA.

■ Endangered Species Act. NMFS listed the winter run salmon as a threatened species in 1989. In 1992, the USFWS listed the Delta smelt as an endangered species. As a result of these ESA listings, NMFS and FWS have imposed strict conditions on the operations of the state and federal water projects. Of particular concern were numerical limits on the number of Delta smelt and winter run salmon which could be taken at the pumps. Such take limits were objectionable to water users, not just because they had water costs, but because they decreased the reliability of supply and made planning difficult.[2]

The ESA Bay-Delta standards had two tremendously beneficial effects. First, they were the only regulatory mechanism able to protect the endangered species of the Estuary (and other species because of overlaps) during the latter part of the 1987 - 1992 drought. Secondly, by imposing painful water costs and unreliability on export agencies, the ESA made it much easier for export agencies to accept state adopted standards -- after living under the ESA, even strong environmental standards started looking good, provided that the reliability of supply could be improved.

■ Federal Legislation. In 1992, Congress passed and President Bush signed the Central Valley Improvement Act (CVPIA). Among other things, the CVPIA dedicated some 800,000 acre-feet of water/year from the CVP and created a $50 million/ year fund for environmental enhancement. As with the ESA, the CVPIA both provided protection on the ground and, by applying pain up front, made it easier for the federal water contractors to support state adopted Delta standards.

■ Environmental Protection Agency (EPA) standards. The EPA is required, under the

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[2]Interannual supply planning has always been difficult in California. Precipitation in one year is simply is not well correlated with precipitation in the previous year. California has developed enormous amounts of storage to carry water over from year to year to ameliorate this inherent uncertainty.

By contrast, relatively sophisticated intra-annual supply planning is possible because we are able to predict annual runoff levels with fair accuracy by March or April of each year (and of course, we already know whether reservoirs are empty or full). The predictability of supplies intra-annually is important to water users because it allows gives them the time to make more efficient management decisions. Growers can predict how much acreage they can farm. Districts can decide whether to call for shortages or to seek temporary sources of supply. Based upon statistical analyses, districts can determine whether they should seek new permanent sources of supply.

Take limits threatened the intra-annual predictability of water supply for exporters because the take of fish at the export pumps is not well correlated with precipitation -- we don't know when the fish might show up at the pumps. Thus, even with a wet winter and full storage, exports might be low because of limits on take. It is clear that water agencies consider the loss of intra-annual and interannual predictability caused by take limits to be more damaging to them than the mere loss of water or the expenditure of cash to protect the environment.

Clean Water Act to approve the water quality control plans of the states. If states do not adequately protect water quality, EPA is required to step in and promulgate its own standards. When the state withdrew D 1630, EPA decided that it could no longer wait for the state to act and began its own promulgation process. The EPA standards-setting was perhaps less crucial than the ESA or the CVPIA in bringing water users to the table, since they were skeptical that the EPA could implement its new standards. However, the EPA process was a catalyst for a great deal of negotiation between the urban and environmental communities over standards which would protect the environment with the least possible impact on water users. Moreover, the EPA standards were, in fact, implemented as ESA standards by the USFWS and NMFS.

■ The State Federal Framework Agreement. The administration came to regret its decision to abandon the field almost immediately. Governor Wilson's decision to abandon state standards was widely criticized in the press. In practical terms, it left the state with no justification for easing the federal government out of water management. On the contrary, it strengthened the federal justification for intervention. And the federal actions under ESA to protect winter run salmon and Delta smelt were considered unnecessarily painful by the water users. After prodding by the urban and business communities, the state essentially reversed course and negotiated a Framework Agreement with the federal government. The agreement was, yet again, a restatement of the Three Way formula -- immediate Bay-Delta improvements linked to a long-term planning process. In this case, the state of California would generate, through the SWRCB, standards comparable to the federal EPA and ESA standards. Once these standards were in place and implemented, the federal government would release primary control of the Delta to the state. At the same time, a new long-term planning process would take place, this time under joint state-federal auspices.

III. BIOLOGY AND REMEDIATION

The Estuary has been subjected to a wide variety of injuries over the last century, including:

■ Land use changes. Throughout the Central Valley and in the Delta, tidal and seasonal wetlands were drained and diked. The rivers were forced into narrow channels. In the Delta, this phenomenon resulted in a set of "islands" surrounded by narrow Delta channels. The result of these changes was a massive loss of habitat available to fish, birds and plants.

■ Destruction of spawning habitat. The construction of dams on most Central Valley streams and rivers destroyed much of the habitat for Chinook salmon. Salmon spawning is now generally restricted to short stretches below dams on the valley floor. That spawning can be harmed by improper temperatures, fluctuations in outflows, and toxic releases.

■ Reduced outflows. A significant fraction of the water that once flowed through the Central Valley watershed is now diverted, either upstream or from the Delta for urban and agricultural use. Because the spring months are characterized by high flows (from snowmelt) with little fear of flooding, diversions of flows are particularly high during this period. Unfortunately, the spring is also a key period for many Delta species. Statistical analysis indicates convincingly that higher Delta outflows in the spring are correlated with the health of many Delta species.

■ Diversions. The diversion of water harms the ecosystem, not just by reducing flows, but by physically drawing fish into the pumps (or into the vicinity of the pumps, where

predators await them). The state and federal pumps in the southern Delta are the two most notorious examples. However, thousands of additional diversion points exist within the Delta islands and along the Central Valley tributaries. The amount of harm caused by diversions is difficult to quantify since much of the damage is caused in the vicinity of the pumps and not the pumps themselves. However, the impact is certainly large.

The problems have reached the point that numerous species and populations dependant upon the Estuary and the Central Valley watershed are on the verge of extinction, including the winter and spring run Chinook salmon, Delta smelt, longfin smelt, and Sacramento splittail. The problems have become so great that nearly everyone now agrees that something must be done to retrieve the situation.

Generally speaking, the protect and restore the Estuary, we must undo the impacts of past environmental insults. Breaking these out in terms of how long the measures would take to bring to fruition, we get the following rough list:

Measures that can be taken immediately.

- Control Delta inflow and outflow through operations of the state and federal projects. Increased Delta outflow is particularly needed during the spring months.
- Control the operation of gates within the Delta. Close gates (at the Delta Cross Channel in the north Delta and the Old River Barrier in the South Delta) in order to help keep salmon migrating down the Sacramento and San Joaquin Rivers away from the Central Delta and away from the export pumps.
- Control diversions at the export facilities. Limit exports at times when the diversion of water causes biological damage. The most important period for the reduction of pumping appears to be in the spring.

Measures that can be taken within a few years.

- Control Delta inflow and outflow through the operations of all Central Valley water users (and thus, control inflow by tributary). This measure requires a water rights decision by the SWRCB or an environmental purchase mechanism.
- Limit impact of Delta island and tributary diversions through screening of intakes or change of diversion patterns
- Develop an adaptive management system in which diversions (and outflows?) are attuned to biological conditions in real-time.
- Reduce toxic discharges.

Measures that may take a decade or more.

- Major new plumbing in the Delta or in the Central Valley (e.g., an isolated transfer system to get the export pumps out of the Delta).
- Development of an integrated groundwater management system in the Central Valley.
- Major additions to storage (including surface and groundwater storage arrangements)
- Restore large areas to riparian, wetland, and shallow tidal habitat.

This topology and the severity of the remedial measures explain the strategy which was developed in the Three Way Process and which is being played out with the December agreement and the long-term planning process. First we implement those measures which can

be taken immediately to stabilize the environment of the Estuary (the short and middle term measures). Then, using the breathing space created by the initial measures, we can consider longer term actions.

IV. STRATEGIES, TACTICS AND POLITICS

The process by which the agreement came to together was convoluted. All sides had temptations to walk away from the agreement. In fact, this nearly happened. In the end, though, the desirability of the agreement from all perspectives provided enough glue to hold the thing together. Before describing how the agreement coalesced, it will be useful to discuss the motivations of each of the key players.

■ The State. The state administration was very ambivalent toward the negotiations and implementation of the state-federal framework agreement. The agreement was good policy but the politics were dicey. The same considerations which led Governor Wilson to withdraw D 1630 were still in play and others besides:

- By engineering a collapse of joint state-federal protection and management in the Estuary and forcing the Federal government to take full responsibility for protecting the Estuary, Governor Wilson could blame the feds for any economic repercussions and argue that he was defending state's rights against imperial Washington.
- Any agreement by California in 1994 to implement standards under the gun of the Federal government would be seen (rightly) as a flip flop from 1993 when the Governor pulled the plug on his own standards rather than enter into negotiations with the federal government.
- A joint state-federal long-term planning process would wipe out the state's own long-term process (BDOC) and would be an admission that the state could not plan and manage the Delta without federal involvement.
- If export agriculture, especially Kern County, were not on board, implementation of SWRCB standards could cost the administration a major source of political support.

On the other hand, cooperation with the Federal government on developing SWRCB standards and a long-term process offered advantages:

- Strong SWRCB standards could wrest primary control over the Delta away from the Federal agencies. In particular, a proactive state position on standards would provide leverage to get NMFS and USFWS to back away from strict take limits at the export pumps.
- The agreement could be seen as fulfillment of the Governor's water policy.
- Important constituancies within the urban, business agricultural communities were strongly supportive of reaching a stable agreement.

In the fall of 1994, the state administration gameplan was to go negative – force a state-federal crisis by having the SWRCB adopt draft standards which would be too weak to be acceptable to the federal government. However, under pressure from the urban and business communities, and parts of the agricultural community, the state agreed to make an effort to reach an accommodation with the federal government. Once the state agreed to "give peace a

chance", the door was open to reaching an agreement. However, even then, state support for the agreement was clearly conditioned on the acceptability of the agreement to Kern County Water Agency. If KCWA had gone against the agreement, the state would almost certainly have pulled away (an echo of the state's decision to back away from D 1630).

■ The Federal Government. The federal administration was strongly supportive of reaching an accommodation with the state on SWRCB standards and the long-term process. The administration did not want to give Governor Wilson an opportunity to use a Bay-Delta crisis as an opportunity to bash the federal government and the Endangered Species Act. Nor did the federal government wish to remain in the business of managing the Delta on a long-term basis. On the other hand, the federal government was mandated to protect the Estuary under a variety of federal laws, including the ESA, CWA, and the CVPIA.

For this reason, the federal government had a tricky hand to play. If the feds took a very hard line on standards, the state would walk away. If they took a soft line, the state would take the federal government to the cleaners and the environmental organizations would sue the federal government for failure to comply with environmental laws.

Moreover, the federal agencies were not unified internally. Both NMFS and USFWS were taking a hard line on the flows and take standards needed to protect winter run salmon and Delta smelt. In particular, both were committed to a standard which would limit reverse flows (see below) and to stringent limits on the take of these fish at the pumps. Both issues were non starters for the water users because of the water costs (with reverse flows) and decreased reliability of supply (from take limits). After some arm twisting by the federal administration, NMFS and USFWS indicated a willingness to consider alternative approaches to the protection of endangered species, provided that protection was not jeopardized. The willingness by NMFS and USFWS to look at a variety of approaches opened the door to resolution of the disputes over export pumping controls and take limits.

■ The Environmental Organizations. The primary environmental organizations involved in the negotiations leading up to the agreement were the Bay Institute, Environmental Defense Fund and Natural Heritage Institute.

These organizations generally accept the Three Way formula -- immediate environmental improvements, with more environmental improvements to come during the long-term planning process. For this reason, the bottom line for environmental groups in the negotiations was not full environmental protection, but rather standards adequate to (1) stabilize the estuarine environment, and (2) assure protection of endangered species.

This strategy is based upon the view that water interests can and will block any environmental restoration program that causes major new shortages in export areas. Therefore, while protection adequate to stabilize the situation in the Estuary is necessary and possible in the short term, full restoration in a single step is not. Additional improvements in the Estuary will have to be part of a future long-term planning effort. (That effort will begin in 1995 under joint state-federal auspices.) The sooner that planning effort can be begun, the sooner the environment can expect to achieve major additional gains in protection.

Moreover, the environmental groups were reluctant to rely upon the federal government and particularly upon the endangered species act as the primary bulwark of protection for the Estuary. For this reason, environmental groups were willing to accept somewhat less than they might have hoped for from the ESA in return for the assurance that all sides (especially the state and the water users) would support the new standards. The wisdom of this strategy was borne out by the November elections.

- Urban Water Agencies. The urban water agencies, like the environmental organizations, believe that the Three Way formula of immediate environmental protections coupled to a long-term planning process is the best way to achieve their goals of high quality, reliable and affordable supplies of water. This conclusion is based upon the following considerations:

  - Urban water agencies generally are not facing an immediate major water supply problem. With water conservation, reclamation, and a major reduction in baseline demand due to the last drought, demand will not outstrip supply for a decade or more. Water transfers from agriculture provide an additional buffer.
  - However, urban agencies are facing water quality and security problems already and project water supply problems within a decade or so given current trends:
    - Water supply. The current physical and regulatory arrangements in the Delta virtually cut off southern California from additional Sacramento Valley supplies. In the long run, Southern California must either be prepared to meet future demands from existing supplies, cannibalize west side agriculture or get access to additional supplies from the Sacramento Valley (whether using adaptive management techniques or a safer transfer facility).
    - Water quality. Delta water has high amounts of organics, which react with disinfectants during treatment to form compounds which may be carcinogenic. EPA water quality standards for these compounds mean that treatment of Delta water will become increasingly expensive.
    - Security. There is a significant chance that a major earthquake in the Delta could lead to the collapse of many Delta islands simultaneously. Since the islands are below sea level, collapse would cause water to rush into the islands, probably from the Bay. The inrush would bring salty water into the Delta, making it undrinkable for many months, perhaps longer.
  - Until the Delta environment is stabilized, no other water management initiatives involving the Delta will be achievable. Instead, most attention will continue to be given to the needs of endangered species and new standards. Water supplies will be cut in unpredictable ways. Certainly, few environmentalists will be willing to support long-term planning when the Estuary is continuing to collapse in the short term.
  - The water and financial cost to urban agencies of immediate standards to protect the Estuary are affordable. The costs of not proceeding with a long-term planning process could be enormous.

In essence, the urban agencies have now embarked upon a 20 year strategic plan -- support standards for the Estuary and give up water now in order to (1) stabilize the estuarine

environment and reduce the risk of unforseen shortages and (2) lay the foundation for a long-term planning process that could provide for urban needs well into the 21st century. In many ways, the urban and environmental visions are compatible, provided that future modes of water acquisition are environmentally friendly. The catch is that accepting the urban offer of short and long term environmental gains for the Estuary and for Central Valley rivers implies that environmentalists will have to abandon attempts to use water shortages to constrain urban growth. Some may be unwilling to give up that lever. However, that is a topic for another day.

■ Agriculture. Of all the interest groups, agriculture has the greatest reservations about the Three Way formula:

- Upstream agriculture. A state commitment to implement new standards to protect the Estuary will require water. Upstream agriculture has, in the past, demanded that junior users (e.g., the state and federal projects) bear the full burden of protective standards. In practice, there is a significant likelihood that the SWRCB, in its water rights process, will attempt to reallocate some water from upstream users using the public trust doctrine and other authorities. Therefore, since upstream agriculture is generally water rich, it arguably has fewer gains and greater risks from state implementation of short term standards and a long-term planning process. The position of upstream agriculture remains ambiguous. The Northern California Water Association signed the agreement on December 15 on behalf of a number of agricultural districts (primarily rice) in the Sacramento Valley. However, other upstream agricultural districts were conspicuous by their absence. Upstream agriculture is no longer likely to oppose the SWRCB standards. However, look for fireworks when the SWRCB attempts to determine who should give up water to meet the standards.

- Export agriculture. Export agriculture has historically opposed new standards for the Estuary because, even if upstream agriculture contributes some water, export agriculture would continue to bear a major part of the burden. Unlike the urban agencies, export agriculture is already water short. Contributions to Delta protection mean that land must be fallowed/ and or groundwater tables must drop. Some farmers may go bankrupt. Therefore, the sacrifices involved in accepting Delta standards have greater immediate consequences to export agriculture than to urban exporters. It was the fear of losing water that led Kern County Water Agency to oppose D 1630 in 1993. On the other hand, export agriculture is subject to the same dynamics as the urban export agencies. Without a settlement in the Delta, water supply conditions will only get worse. For this reason, export agriculture has been internally divided on the advisability of supporting Delta standards. Hardliners held the upper hand until recently. However, with the pain inflicted by the ESA and CVPIA requirements the moderate faction was able to win grudging support for standards with the argument that new standards would improve, not worsen water supply conditions.

V. THE DEAL IS CUT

EPA was required under court order to issue its final standards for the Estuary on December

15, 1994. NMFS and USFWS also determined that they would issue their biological opinions for winter run salmon and Delta smelt on December 15, 1994. The biological opinions represented de facto Delta standards because they set flow, export and take limits for the state and federal projects. Water users had been very unhappy with the biological opinions of 1993 and 1994, feeling that the loss of water and reliability were unreasonably high. In any case, the federal government was ready to propose and implement a set of strong Bay-Delta standards for 1995.

Under the state-federal framework agreement, the SWRCB was obligated to come up with draft Bay-Delta standards in December 1994 and to promulgate final standards in early 1995. If the standards were adequate to satisfy federal mandates, then the federal government could step back and let California resume active control over Delta management. If the standards were too weak, however, the federal government would refuse to accede to the standards and continue its operation of the Delta. Thus, the stage was set for either consensus or conflict between the state and federal governments in December.

As discussed above, the federal, urban, and environmental players all had reasons to avoid a blow up between the state and federal governments over standards. Thus, in early 1994, urban and environmental interests, in cooperation with EPA, came to near agreement on the measures needed to implement the EPA standards. This agreement would serve as one of the foundations of the December 15 agreement.

Next, urban interests, calculating that the state administration would not support state standards equivalent to the federal standards without support from export agriculture, abandoned their bilateral discussions with the environmental community and opened up a dialogue with the agricultural community on the possibility of comprehensive Bay-Delta standards. The urban and agricultural groups together spent on the order of $1 million developing biologically based standards which would have minimum impact on water users.

The urban/ag proposal is described in detail in other documents. In essence, the urban/ag proposal would have provided for:

- Spring Delta outflows somewhat lower than outflows in the EPA standards.
- Exports less than 30% of inflows to the Delta from February to June, 35% in July, and 65% for the rest of the year.
- Permanent closure of the Delta Cross Channel gates from Febuary through May (to protect winter run salmon), with 30 days of closure from November through January.
- Spring pulse flows in April and May on the San Joaquin River, coupled with closure of the Old River Barrier, and a requirement that export pumping can never be greater than the pulse flow to protect fall run salmon.
- The standards assumed that the federal agencies would eliminate their take requirements.

There is evidence that the original urban/ag/state plan was to present a set of standards for adoption by the SWRCB that were relatively strong, but not as strong as the federal requirements. Then the governor and the federal government would have a stare down to see who blinked first. (During this period, the ag/urban group refused to discuss any

modification of their proposal with the federal government or the environmental community). However, for reasons that are not entirely clear, the urban/ag/state group side decided to make a good faith effort to resolve the differences with the federal/environmental side. Probably, pressure from the urban agencies and the business community was helpful, as were signals from the federal agencies and the environmental community that they were willing to be flexible on the form of standards.

At a meeting in Monterey on December 1, the state and federal governments continued to play chicken with each other -- the feds promising to move ahead with the ESA standards on December 15 unless agreement was reached and the state/urban/ag side predicting that such a move would cause all efforts to accommodate the feds on the state side to collapse. However, at the same meeting, it became clear to all sides that the scientific justification for export controls, whether based upon reverse flows or percentage of Delta inflow was very weak and that accommodations might be possible which cost less water while maintaining equivalent levels of protection. The urban/ag group sweetened the pot by committing to a fund of money to allow non water related habitat improvements such as screening of diversions. Despite the bluster, it was clear that all sides wanted an accommodation.

On December 6 a meeting was held in Los Angeles between key representatives of the state and federal agencies, and the urban, agricultural and environmental groups. At that meeting, the federal agencies agreed to use the ag/urban proposal as the basis for further discussions. While there was talk of allowing negotiations to continue after December 15 as long as progress was being made, most people felt that if the discussions were not fruitful by December 15, the chances of reaching a successful conclusion were greatly reduced. Also, at this meeting, the state pushed strongly for delay of the federal decision on whether to list the Sacramento splittail as threatened or endangered. The listing would not cost any more water, but it would have undermined the state's ability to argue that it had taken on the federal government over ESA and come out victorious. USFWS acceded to this request and has delayed a listing decision for six months.

On December 12, all the sides met in Sacramento for three days of marathon negotiations. While Kern County (and therefore, the state) nearly withdrew from the negotiations on December 13, good sense prevailed and a final package was hammered out that modified the urban/ag proposal in the following ways (ignoring minor changes):

- The amount of allowable exports in February was significantly reduced. In return, the amount of allowable exports from March through July was raised slightly.
- Flows in the San Joaquin River in April and May were significantly increased.
- The number of days of closure of the Delta Cross Channel were increased.
- The water cost of the standards were increased slightly, from about 1.0 MAF in critical years to less than 1.1 MAF in critical years.
- Greater flexibility was built into the standards to allow exporters to make up water lost as a result of reduced pumping because of limit concerns (if consistent with environmental protection).
- The state and federal governments, and the water users agreed to provide $180 million in funds over the next three years for non water-related environmental improvements

VI. UNDERSTANDING THE STANDARDS: THEORIES OF WATER MANAGEMENT IN THE DELTA

As discussed above in the section on biology, any standards aimed at quick improvements in environmental conditions in the Estuary must be primarily based upon:

- Control over flows into and out of the Estuary
- Diversions from the estuary
- The movement of water within the Estuary.
- Other fast-track projects which do not involve the movement of water such as screening of diversions or control of poaching.

■ Delta Outflow Standards are Well Developed. The goal is to provide optimum conditions for the ecosystem at an acceptable cost to users of water. In some areas, we have correlations between physical conditions and biological health to guide us. In particular, there is strong scientific evidence to indicate that strong Delta outflow in the spring is correlated with biological health. The spring outflow (or salinity) standard is widely supported and is part of the package of standards

■ Competing Theories over Control Over Exports. When it comes to setting standards for the export pumps, there is very little information to go on. Instead, standards are set according to conceptual models of how movement of water in the Delta affects biology. Two different theories of the Delta have been in competition with one another for the past year: the theory that net flows of water are dominant biologically, the other that tidal effects are dominant. The standards which emerge from each theory are quite different:

■ Net Flows. The net flow theory follows the average flow of water in the Delta and assumes that biota are carried with that net flow. In this conceptual model, the Delta can be though to be a set of pipes. If there is a net flow through the pipes toward the export pumps, then fish and salt will tend to be swept into the pumps over a period of time. Under this theory, fish can be isolated from the effects of the pumps (and the pumps from salt) by assuring that net flows toward the pumps are minimal when species of concern are in the Delta. Adherents of this school would advocate limits on reverse flows and strict pumping limits when salmon are migrating through the Delta. This model has been the accepted model for several decades. It has major implications for policy. Under this model, export pumping from the south Delta must be severely constrained to protect the Delta (it is therefore intuitively attractive to environmentalists). However, since the net flow problem can be solved if the export intakes are connected to an isolated transfer system around the Delta, this model has also been one of the major foundations of arguments for a peripheral canal.

Also, this theory implies that a choice must be frequently be made between closures of the Delta Cross Channel to keep salmon in the Sacramento River and out of the Central Delta and the effects of those closures on reverse flows. That is, under this theory, gate closures may help salmon by keeping them in the Sacramento, but may hurt Delta smelt (by creating reverse flows which sweep them to the pumps).

■ Tidal Action. In the Delta, flows from tidal action are perhaps 100 times greater than

tidal flows on average. Supporters of this theory posit that the mixing action induced by the tides makes the Delta like a swirling bowl of soup with the export pumps like a straw stuck into that soup. Under this theory, once fish reach the tidal zone, they are not swept into the pumps, but might just as easily be sent away from the pumps as toward them. Instead, the most important factors to consider are the concentration of fish in the vicinity of the intakes and the rate of pumping -- how thick is your soup and how hard are you sucking on the straw. Under this theory, net flows (e.g., reverse flows) into the pumps are not very important per se for either biology or for control over salinity. This theory tends to be less restrictive on pumping. Under this theory, closure of the Delta Cross Channel does not cause a problem for Delta smelt because reverse flows are irrelevant to the movement of fish in the Delta.

There is very little evidence to show which theory is correct. It may well be that the tidal theory is correct for short time scales and the net flow theory for longer time scales. An additional complication is that many fish do not simply float with the currents, but move according to their own logic (whether to move toward a desired salinity level or out to the ocean). In any case, at present, no there is no one-size-fits-all export standard that can accurately pinpoint when it is safe to pump and when it is not.

Both theories are imbedded in the standards in ways that are not entirely consistent. The tidal action theory is the basis for the primary export standard. The overall limit on exports is calculated (ignoring some complications) by adding up the total amount of Delta inflow and multiplying by a fraction (.35 from February to June, .65 for other months). Except for a 30 day period in April and May (when exports cannot exceed San Joaquin inflows), there is no consideration of where Delta inflows come from.

On the other hand, the Delta Cross Channel gates are closed only 45 days over the period from November through January due to concerns that longer closures would create reverse flows that might hurt Delta smelt. Ironically, the application of the net flow theory in this case by USFWS greatly reduces the protection for spring run salmon smolts as they migrate down through the Delta in November, December and January.

- Non Water Factors in Environmental Protection. Water users, quite rightly, take the position that reduced flows and increased exports are not the only cause of environmental problems within the Estuary. For this reason, they have long complained that increased flows and reduced diversions should not be the only tools used in protecting the Delta. In the past, environmentalists have been suspicious of such claims, not because they were wrong, but because they were generally put forward as a reason why stronger water quality standards should not be set.

We now appear to be past that hurdle. While water users continue to place great emphasis on environmental protection through means other than water, they now agree that such measures should take place in addition to improved flow and diversion standards. The agreement includes $180 million for such measures as:

- Screening diversions
- Waste discharge control

- Reduction of illegal fishing
- Riparian, wetland, and estuarine habitat restoration

The benefit to water users is that (1) the money increases the chances that the new standards will succeed and (2) if successful, the new programs will demonstrate that non water measures can take the place of water, thereby reducing pressure for additional flow measures in the future.

VII. THE STANDARDS

The new standards are summarized on Table 1. In this section, key elements of the standards will be described in more detail.

In summary, the agreement is an attempt to develop an ecosystem approach to environmental protection in the Estuary using tools that will be readily available over the next three years (flows, diversions, gates, and simple non-water measures). In practice, the ecosystem approach was pulled and tugged somewhat by the (1) the legal and ecological requirements to protect endangered species, and (2) the need to keep water supply losses within politically acceptable levels.

- Estuarine Habitat Standard. This standard can be though of as either a Delta outflow standard or a Delta salinity standard. The standard requires (roughly speaking) that salinity (and outflow) conditions that would have existed in Suisun Bay assuming the water operations from 1970 must be maintained from February through June. In other words, the standard forces the water projects to turn back the clock and let out more water in the late winter and spring.

The standard is based upon mathematical correlations between the average location of 2 part per thousand (ppt) salinity with biological indices for such species as longfin smelt, striped bass, neomysis mercedes, etc. Basically, the correlations indicate that, the farther downstream that the average salinity is pushed in the spring, the better for the fish. Because reductions in spring outflows have been continuous over the last 50 years, conditions get better as you move back in time. The compromise chosen for how much water to restore was to restore the flows that would have existed in about 1970 for any given year. Basically, the greater the runoff of water in the Central Valley watershed from January through May, the more days the position of the 2 ppt salinity line must be downstream of two measuring stations in Suisun Bay -- Chipps Island and Roe Island -- from February through June. In addition, the 2 ppt salinity line must be below the confluence for the entire 5 month period to protect Delta smelt.[3]

Mathematical correlations aside, Suisun Bay was chosen as the area for maintenance of salinity conditions because Suisun Bay contains the last section of prime shallow water fish habitat left in the Estuary. Most other shallow habitat was diked up and converted to farming

[3] Delta smelt seek salinities slightly above 2 ppt. If the 2 ppt line were allowed to move into the Delta, smelt would also move upstream -- and into vicinity of the export pumps.

many years ago.

The standard generally follows the EPA salinity requirements for estuarine habitat. Differences relate to the target year (1971.5 vs 1968) and to salinity standards during extraordinarily dry conditions. Environmental groups and urban water agencies came to agreement on this standard early in 1994. It has a strong scientific basis, provides significant protection, but, because the standard is tuned to actual runoff conditions (both sides share the benefits and pain of wet and dry years), has water supply impacts which were acceptable to urban (and eventually agricultural) groups.

■ Delta Export/Inflow Relationships. This is the primary standard to control pumping by the state and federal export facilities in the south Delta. Basically, the exporters are allowed to pump no more than a given percentage of inflow at any given time. The allowable percentage varies over the year. It is low (35%) from February to June and high (65%) from July to January.

There is an additional pumping limitation in the April - May period to protect San Joaquin River salmon (see below). Also, pumping will be reduced if necessary to reduce the take of endangered species (see below). Otherwise, pumping will be controlled by this standard alone. Absolute pumping limits and reverse flow standards are gone.

The basis for the export/inflow standard is primarily intuitive. It seems logical that if more water is flowing into the Delta, then pumping can be increased without causing additional impacts on the environment. Similarly, if inflow drops, then exports should also drop. The controversy with this train of logic is that it lumps all sources of Delta inflow into a single number. If Sacramento inflow is high, but San Joaquin inflow is low, then allowable pumping may be higher than what is provided by the San Joaquin River. If so, then water from the Sacramento River will make its way across the Delta to the pumps. Whether this phenomenon is considered important depends upon whether net flows or tidal action is the dominant physical mechanism governing the movement of biota. This issue is discussed in greater detail in a previous section.

The standard will significantly reduce export pumping in the later winter and spring months compared to historical levels, something environmental groups have sought for many years because this period is important in the lifecycles of many species. On the other hand, the standard will push pumping into the summer and fall months which may cause new problems to appear. Overall, however, the shift in pumping patterns away from the spring is thought by most to offer significant net benefits.

■ San Joaquin Fall Run Salmon standards. Salmon smolts migrate down from the Stanislaus, Tuolumne, and Merced Rivers into the San Joaquin River and thence into the Delta and out into the ocean during March, April, and May. Getting these salmon past the pumps (which sit just west of the San Joaquin River) is very tricky. You can reduce pumping, or you can try to wall off the San Joaquin River from the pumps (by putting a barrier at "Old River" where a channel leading directly into the pumps splits off from the main San Joaquin River) or you can increase flows in the San Joaquin River to transport the salmon out of harm's way as quickly as possible.

There are additional complications. Placing a barrier at Old River (the single most beneficial step) causes more water to be sucked from the south Delta toward the pumps, possibly causing increased entrainment of Delta smelt. To solve this problem, exports must be reduced. Reducing exports for three months would cause reductions in exports which are unacceptable to water exporters.

Given the swirl of factors and tradeoffs between protection of salmon and protection of Delta smelt and the need to maintain significant exports during this three month period, a standard was developed which focusses most protection on a limited period during which a majority of the salmon should be migrating.

- Base flows of 700 - 3,400 cfs (depending on year-type) will be provided in the San Joaquin River from February through May of all years.
- The primary effort to get fish passage through the Delta will occur over a 30 day period (not necessarily continuous) in April and May. Pulses of water will be sent down the three San Joaquin tributaries to stimulate down migration. The total of the pulses will vary from about 3,000 - 8,000 cfs depending upon year type. At the same time, a barrier will be placed at Old River and export pumping will be restricted to 100% of Vernalis San Joaquin inflow.

The compromise reached is not ideal. Significant numbers of salmon will migrate outside the window of protection and will suffer heavy losses. During the window of protection, the flow levels are good, but exports will remain at dangerously high levels (though they will be reduced compared to past conditions). However, the standard is a significant step forward compared to past conditions. Also, the standard will only be met to the extent possible by the federal government through releases from New Melones until the SWRCB water rights decision (this means that for the first three years or so, the full flow amounts may not be available).

Bolstering this standard through the purchase of additional water, the purchase of export rights, and through the flexibility in the agreement to reduce pumping below nominal standards will be a high priority over the next few years.

- Operational Flexibility and Adaptive Management

The Delta is as a major ecological resource. It also serves as a major switching yard for some 6 - 7 MAF of pumped water/year. The mismatch between these two uses has been one of the primary causes of conflict over the Delta. We simply cannot predict with accuracy when the pumps actually cause damage. Therefore, whenever preset export standards are used, the restrictions on exports must be very stringent to assure that protection will be achieved. Fixed standards stringent enough to provide for significant restoration of the Estuary (i.e., to provide protection significantly beyond the current agreement) would require that exports from the south Delta be reduced well below the export levels agreed to in the Bay-Delta agreement.

Therefore, to achieve environmental restoration, we must either reduce exports, move the export pumps out of the Delta (e.g., an isolated transfer system) or we must find ways to

allow levels of exports near current levels from the Delta with reduced environmental impacts. The most promising method to do this is adaptive management in which pumping is tuned to the actual physical and biological conditions which exist at any given time. For example, if large numbers of Delta smelt move into the vicinity of the pumps, then pumping could be suppressed before take becomes a problem. In other parts of the year, if there are few fish in the vicinity of the pumps, then pumping could be increased. Such a management approach offers the possibility of highly efficient, highly protective biological standards and might possibly allow for significant restoration of the Estuary without the need for dramatic reductions in exports or an isolated transfer facility (or its equivalent).

Adaptive management is introduced into the agreement as a way to provide water exporters with assurances that, if exports are reduced below nominal export standards to reduce the take of endangered species, allowance for pumping above the standards will be made later in the year to compensate (provided that increased pumping is consistent with biological protection). In this way, endangered species can get adequate protection without dramatic reductions in the predictability of export supply (one of the key issues which exporters have had with the ESA).

However, another section of the agreement implies that reductions in pumping and subsequent increases can also be made at the request of an "Operations Group." This clause opens the door to adaptive management that goes beyond take limits. The Operations Groups will be made up of representatives from the key state and federal water management and wildlife protection agencies as well as water user, environmental, and fisheries interests. In essence, exporters will have a water budget each year (the amount of water they could export given the nominal export standards). Within that budget, water managers will be able to modify export controls to maximize environmental returns.

Caution is certainly needed. Unless we are able to accurately predict when it is safe to pump and when it is dangerous, adaptive management will not provide the promised benefits. There are three ingredients to making adaptive management work:

- Better understanding of biological relationships so that we know how species respond to other species and to physical conditions.
- Monitoring so that we know where key species are in the Delta at any given time and where they are likely to be in the near future.
- The development of institutions which insure that water is truly managed to maximize environmental benefits.

Work is proceeding on all elements (with much work still needed). In particular, a monitoring element in the agreement will help develop information for the first two points. The Operations Group in the agreement provides the kernel of an institutional structure to manage exports in the future.

My personal belief is that adaptive management will be very beneficial to the environment and will come to dominate Delta water management within a decade. Adaptive management can be a frightening concept because it means that we must trust institutions to make good decisions on the fly about the environment. We will no longer be able to simply fall back on

black and white standards. But I would argue that black and white standards are so inefficient that they reduce to unacceptable levels the amount of environmental protection that we can justify politically and economically.

- Monitoring. A key element of the agreement is stepped monitoring programs to:

  - Determine how well the standards are working.
  - Locate fish concentrations to allow adaptive management.
  - Help to develop new and improved standards in the future.

- Category 3 Funding. The use of the $180 million fund for non water environmental protection was discussed above. A small part of the fund may also be tapped to provide for additional flows to bolster weaknesses in the agreement.

- Endangered Species. The two listed species -- winter run salmon and Delta smelt -- receive relatively strong protection in this agreement. The standards are oriented around the needs of these species and take limits will remain as a bottom line safety net. Of more concern are the species that probably deserve listing, but are not now listed -- spring run salmon, Sacramento splittail, and longfin smelt. Of these, the splittail and the longfin smelt have habitat needs which are generally met by the standards, though without listing, they will not have take limits as a safety net. The species most at risk from these standards is the Sacramento spring run salmon.

As discussed above, protection for the spring run went head to head with the needs of Delta smelt and the needs of exporters and lost. Spring run salmon need protection as they migrate down the Sacramento during November, December and January. Protection can be provided by closing the Delta Cross Channel (to keep them out of the Central Delta) and by reducing pumping during this period. But full closure of the Delta Cross Channel was opposed by USFWS because it might increase losses of Delta smelt at the pumps. Reductions in exports during this were opposed by water exporters because, now that spring pumping has been greatly reduced, the November - January window is one of their main pumping windows.

The agreement does contain Cross Channel closures of 45 days during November - January and this will help, particularly if the closures can be targeted on when spring run are likely to be present. Other measures that can be taken to bolster spring run protection include:

- Convince USFWS that full closure of the Cross Channel does not put Delta smelt at risk.
- Spend Category 3 money on improving habitat conditions upstream.
- Use the flexibility in the standards to reduce pumping when spring run are likely to be present.
- Seek a listing of spring salmon as an endangered species.

Because of its effect on the commercial fishing industry, environmental groups have held off seeking a listing in the past. And, if the other measures are successful a listing might not be needed. However, all parties are aware that an ESA listing petition may be needed.

A new ESA listing would not be welcomed by the state and federal governments. The state was at great pains to insert language into the agreement implying that the standards were so good that new listings would only occur as a result of "unforseen circumstances." For its part, the Federal government agreed that it would be responsible for any additional water costs which might occur as a result of new listings (the state is off the hook, at least for three years).

VII. IMPLEMENTATION

The SWRCB is committed to implementing the new standards through a water rights decision, scheduled to begin in 1995. Meanwhile, the standards have been incorporated into the NMFS and USFWS biological opinions for winter run salmon and Delta smelt.

Since the biological opinions only apply to the state and federal projects, these projects will bear the brunt of compliance until the SWRCB spreads the burden through its water rights decision. This means that the two projects have every incentive to support rapid movement through the water rights process.

However, since the agreement specified that the federal share of compliance water will come out of the 800 kaf dedicated to the environment in the CVPIA, during critically dry years, much of the CVPIA environmental water could be dedicated for Delta purposes, making it unavailable for its primary purpose -- doubling anadromous fish.

The agreement is only for three years. If the state fails to follow through or the standards are ineffective or new endangered species are listed or the Category 3 fund is not provided, the agreement could collapse after three years or even sooner. On the other hand, if the process is going well, there is every likelihood that elements of the agreement not covered by SWRCB standards will be extended.

VIII. ACRONYMS

CVPIA	Central Valley Project Improvement Act
EPA	US Environmental Protection Agency
ESA	Federal Endangered Species Act
NMFS	National Marine Fisheries Service
SWRCB	State Water Resources Control Board
USFWS	US Fish and Wildlife Service

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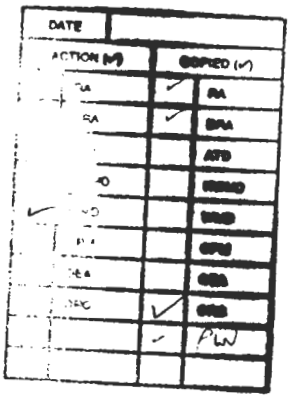


March 13, 1995

Felicia Marcus
Regional Administrator
U.S. Environmental Protection Agency, RA
75 Hawthorne St.
San Francisco, CA 94105

Dear Ms. Marcus:

May I bring to your attention your letter criticizing the Sacramento Bee Editorial comment on the "Agreement" of December 15, which included a meager group of self-appointed "environmentalists" and Delta Water exporters and which was entered into in secret meetings not open to the public clearly in violation of the Brown Act.

Criticism of that "Agreement' that suspends the Delta Protections of existing Federal legislation was appropriate. Further, the "Agreement" in the stated opinion of the State Water Resources Control "violate several of standards they are currently required by D 1485 to meet." I enclose a copy of Board conclusion.

In addition, the now lowered standards of the "Agreement" deliberately fail to provide for the disastrous effects of the discharge of the entire toxic waste stream of the San Joaquin Valley by the San Luis Drain now ordered to proceed by a Fresno Federal Judge on December 2, but not made public until after the "Agreement" was reached on December 15. A contaminated toxic flow that the meager standards of the 'Agreement' cannot accommodate.

These and many other factors support the Bee editorial criticism.

Yours Truly,

John A. Nejedly
Former Chairman
Natural Resources and Wildlife Committee
California State Senate

STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

STATE WATER RESOURCES CONTROL BOARD

PAUL R. BONDERSON BUILDING
901 P STREET
P.O. BOX 100
SACRAMENTO, CALIFORNIA 95812-0100
(916) 657-1873
FAX: 657-1485

Mailing Address
DIVISION OF WATER RIGHTS
P.O Box 2000, Sacramento, CA 95812-2000

NOTICE OF PETITION AND OF PUBLIC HEARING

ON PETITION FOR CHANGES IN THE WATER RIGHTS OF THE CALIFORNIA DEPARTMENT OF WATER RESOURCES AND THE UNITED STATES BUREAU OF RECLAMATION TO DIVERT AND USE WATERS IN THE WATERSHED OF THE SACRAMENTO-SAN JOAQUIN DELTA

April 18, 1995, at 9:00 a.m.
(and additional days as may be necessary)

1416 Ninth Street, First Floor Auditorium
Sacramento, California

SUBJECT OF HEARING

The State Water Resources Control Board (SWRCB) is convening this hearing to consider a petition for changes in specified water right permits of the California Department of Water Resources (DWR) and the United States Bureau of Reclamation (USBR). The DWR and the USBR filed the petition on February 28, 1995.

The purpose of this hearing is to receive evidence that will assist the SWRCB in determining whether to approve the petition. At a subsequent public meeting, the SWRCB will consider adopting an order that would amend the permits of the DWR and the USBR. The permits of the DWR and the USBR that will be considered for amendment under Key Issues 1, 2, 4 and 5 are listed in Attachment A.

BACKGROUND

General

The Bay-Delta Estuary includes the Sacramento-San Joaquin Delta, Suisun Marsh and the embayments upstream of the Golden Gate. The Delta and Suisun Marsh are located where California's two major river systems, the Sacramento and San Joaquin rivers, converge to flow westward to meet incoming seawater tides flowing through the San Francisco Bay.

The watershed of the Bay-Delta Estuary is a critical source of water supply for much of the State, including the needs of a growing population, expanding economy and the aquatic environment. The watershed is a source of drinking water for two-thirds of the State's population; it supplies some of the State's most productive agricultural areas; and it provides water to one of the largest estuarine systems on the west coast of the United States.

Two major water distribution systems release stored water into and divert water from the Delta: the State Water Project (SWP) operated by the DWR and the Central Valley Project (CVP) operated by the USBR. Numerous other water storage and diversion projects influence the inflows into and outflows from the Bay-Delta Estuary.

The Petition

The DWR and the USBR are requesting several changes in their water right permits. These changes would remove conflicts between (1) the standards that the DWR and the USBR must meet under Water Right Decisions 1485 (D-1485) and 1422 (D-1422), and (2) the Principles for Agreement on Bay-Delta Standards Between the State of California and the Federal Government (Principles) executed on December 15, 1994, which the DWR and the USBR have agreed to meet. The parties who signed the Principles, including

representatives of the State and federal governments and urban, agricultural and environmental interests proposed that the SWRCB adopt the standards and operational constraints set forth in the Principles. Accordingly, all of the standards and operational constraints in the Principles are incorporated into a draft Water Quality Control Plan for the Bay-Delta Estuary (1995 Plan) which currently is being considered for adoption.

The Principles and the draft 1995 Plan differ from D-1485 in their approach to protecting the beneficial uses in the Bay-Delta Estuary. The result is that if the DWR and the USBR follow the Principles and the draft 1995 Plan, they will violate several of the standards they are currently required by D-1485 to meet.

The petitioned action would follow adoption of the 1995 Plan. The petitioned action would be an immediate measure to amend the water rights of the DWR and the USBR to remove inconsistencies with the Principles and the 1995 Plan to the extent they would occur in the short term. The petitioned action includes authorization for the DWR and the USBR to divert or redivert water from each other's points of diversion in the southern Delta.

Separately, the SWRCB will consider adopting a comprehensive water right decision after an inclusive water right proceeding in which the SWRCB will consider allocating responsibility to meet the water quality objectives in the 1995 Plan among the water right holders who divert water from the tributaries of the Bay-Delta Estuary. The SWRCB intends to initiate the inclusive water right proceeding as soon as the 1995 Plan is in effect. The inclusive water right proceeding will commence with preparation of appropriate documentation under the California Environmental Quality Act and may require up to three years to complete.

KEY ISSUES

In their petition, the DWR and the USBR have requested the following.

1. Request: That the SWRCB modify the fish and wildlife standards in Condition 2 of D-1485 by replacing the standards and provisions in Table II relating to "Striped Bass Spawning", "Suisun Marsh" and "Operational Constraints" with the provisions in the Principles that address Suisun Marsh, limitations on exports (as a percentage of inflow), and Delta Cross Channel gates closure.

Issue: Should the SWRCB adopt the changes in the fish and wildlife standards required by D-1485, Table II which are set forth in Attachment B? The proposed changes would amend the standards in D-1485 applicable to the western Suisun Marsh, limits on export rates, closure of the Delta Cross Channel gates, and salinity levels required in the San Joaquin River during April and May for striped bass spawning.

2. Request: That the SWRCB adopt a new condition in the permits affected by D-1485 which provides, in effect, that all other conditions, including monitoring requirements, imposed by D-1485 are to be interpreted and implemented to avoid conflict with the provisions of the Principles. The petition cites monitoring requirements imposed by D-1485 as an example of conditions that are to be interpreted to avoid conflict with the Principles.

Issue: Should the SWRCB adopt the following condition?

> Terms and conditions of this permit other than water quality standards or flow requirements shall be interpreted and implemented to avoid conflict with the Principles for Agreement on Bay-Delta Standards Between the State of California and the Federal Government executed on December 15, 1994, a copy of which is attached to this permit and incorporated herein.

3. Request: The USBR requests that the SWRCB take notice of Condition 3 of D-1422 and conform the water quality objectives specified in the CVP water right permits issued pursuant to D-1422 with the current (1991 Plan) water quality objectives for Vernalis of 1.0 and 0.7 mmhos/cm EC for specified periods of the year.

California Legislature

Senate Committee on Natural Resources and Wildlife

TOM HAYDEN
CHAIRMAN

CONSULTANTS
CHRISTOPHER WILEY
LISA HOYOS

COMMITTEE SECRETARY
MERCEDES FLORES

STATE CAPITOL
ROOM 2080
SACRAMENTO CALIFORNIA 95814
TELEPHONE (916) 445 5441

TO: INTERESTED PARTIES

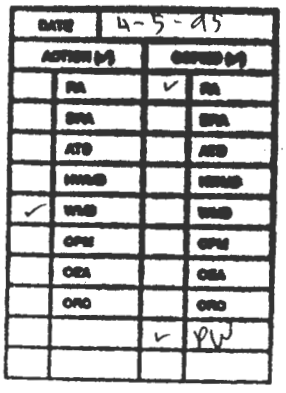
FROM: TOM HAYDEN

DATE: MARCH 28, 1995

Our ongoing investigation of the environmental merits of the December 15 Bay-Delta Agreement has turned up the enclosed memo from a Department of Fish and Game biologist indicating that professional biologists were ordered not to analyze the impact of the agreement on fish and wildlife.

The memo reinforces similar testimony given at the Natural Resources Committee hearing on February 14, 1995, including the testimony of three biologists under oath who said that several runs of salmon will be biologically endangered if current conditions do not change.

It is my continuing view that the Bay-Delta Agreement was orchestrated without sufficient concern for the preservation of springrun salmon and other species in the Sacramento River and its tributaries. Since the agreement is not yet official or finalized, and since the Governor of California has now suspended the Endangered Species Act with a five-year "emergency" declaration, it seems to me the entire Bay Delta Agreement should be reopened for serious public examination.



State of California

Memorandum

To : Perry Herrgesell

Date : March 1, 1995

From : Department of Fish and Game

Subject : Response to letter from John Turner regarding CESA consultation with the SWRCB on the Bay-Delta Water Quality Control Plan

In his letter John Turner stated that the Department was informally consulting with the SWRCB regarding the draft water control plan. I am not aware that this has occurred, but the Department has been consulting with the SWRCB as to how the monitoring, stated in the plan, will be accomplished by the IEP. I do not believe that the Department has done any consultation as to how the plan will be implemented under the CESA.

Last year, the Department had the opportunity to adopt the federal opinion for delta smelt instead of preparing a separate CESA biological opinion. The letter of adoption was forwarded to Sacramento at the end of April of last year. The letter never was forwarded to the Bureau of Reclamation. This means that no biological opinion under the CESA which went into effect in December of 1993 was ever signed for delta smelt in 1994.

Department staff has been put in a very awkward position because it was instructed not to analyze the effects, either positively or negatively, of the December 15th Principles of Agreement or the Bay delta Water Quality Control Plan on the fish and wildlife of the Estuary. As of today, I have not reviewed the biological assessment which was prepared by the SWRCB staff (Chapter XIII appended to the draft WQCP). I also have not received any modeling studies regarding possible effects of the proposed standards on water quality or quantity. I would like to see comparisons of the proposed standards versus the past requirements under D-1485 + winter run (q-west) + delta smelt opinions under different water year types. My primary concern is that although outflow requirements will be in effect from February through June, relaxation of export restrictions in part of July and higher than historical export limititations throughout the rest of the summer and fall *may* put delta smelt in jeopardy once again. It has been the Department's position (e.g., testimony for D-1630) that high exports at any time of the year may be detrimental to fishes in the Estuary. This includes delta smelt.

Dale Sweetnam
Associate Marine Biologist

t upon those straddling the
:e or in opposition to come
with an alternative plan
that relies on verifiable numbers and realistic timing rather than wishful thinking.

Getting Orange County's leaders to think so realistically has not been easy. For example, supervisors recently called for Popejoy to remove some deep cuts in social services but they offered no blueprint on where he ld find the savings. All of supervisors will have to gnize that the choice s down to working to sell s on the sales tax or live the awful fallout of bank- y and then try to explain their constituents and e generations.

ne recent polling on the uptcy suggests a high eness among residents, ere is much education to one between now and about the depths of the gap and the consequenc- naction.

art of Southern Califor- abled quality of life is at . The credibility of e County and the rest of ate in the financial mar- lso is on the line. The visors took an important tep. Now they must be ed to follow through.

Vas- lism.

such material as they seek to acquire their own nuclear arsenals. That's why the surreptitious movement of nuclear products, especially from the former Soviet Union, is justifiably a cause for international concern. FBI Director Louis J. Freeh goes so far as to describe it as "the greatest long-term threat to the security of the United States."

It was recognition of that

sites, as well as help in the physical protection of nuclear laboratories and plants.

This is not a selfless program. Controlling fissionable materials in Russia is an approach to controlling nuclear proliferation, and so serves the security interests of the United States and promotes international stability. The projected cost of the program—about $800 million—is in fact cheap anti-proliferation

nuclear materials indicates unmistakably that more, not less, vigilance is needed in the face of this menace. Last year, intelligence sources say, 124 incidents of attempted nuclear smuggling of suspected Russian-origin materials were detected in Germany alone, more than twice as many as in 1993. Clearly this is not the time for Congress to foolishly undercut a vital nuclear security program.

3/23

Build the River, Not Walls

As the contractors prepare to begin construction, state Sen. Tom Hayden (D-Santa Monica) is trying one last time to encourage local officials to reconsider a public works project that may not be in the best interests of the public.

Hayden and his colleague on the Senate Natural Resources and Wildlife Committee, Sen. Hilda Solis (D-El Monte), have scheduled hearings for Friday in Los Angeles on the county's plan for the Los Angeles River. That plan would raise flood walls and levees along the lower 21 miles of the Los Angeles River as much as eight feet, raise bridges along this same route and cost as much as $500 million.

The need for improved flood protection in this part of the county is unassailable. Downstream residents and businesses in Downey, Long Beach and the other cities near the mouth of the river understandably fear the widespread property loss and injury that could result if storm runoff, channeled into the concrete-lined river, overflowed the existing banks. That's why the county Public Works Department and the Army Corps of Engineers, responding to federal directives, have devised the plan to raise the river's walls.

But having settled on this plan some years ago, their minds seem to have hardened against serious consideration of alternative proposals that would provide comparable flood protection and, at the same time, better watershed management along the river's northern stretch, thus mitigating the need for the higher walls. Even some senior corps officials now acknowledge that the widespread flooding that occurred along the Mississippi River in 1993 despite its levees demonstrates the peril of focusing on walls and levees to the exclusion of other measures such as upstream storage and water reclamation.

Time is running out. The Board of Supervisors meets early next month to consider the county's environmental impact report on the project. The cement mixers could begin mixing soon afterward. To date, the supervisors have shown little interest in an alternative drafted by the Friends of the Los Angeles River. Hayden hopes his hearing will draw the supervisors' attention to the many merits of the alternative plan for the entire region as well as the downstream cities. We do too.

derstandable, but was the rally really necessary? After all, the only really unusual things about the Simpson trial are the prominence of the defendant and the publicity. Defense counsel's job is to look for holes in the prosecution's case. That means finding every possible chink in a police investigation.

It's a terribly familiar game, and a high percentage of L.A. police officers have been on the witness stand at some time. They are experienced enough not to take criticism personally and to realize where the defense lawyers are coming from. The public, too, should realize what is going on.

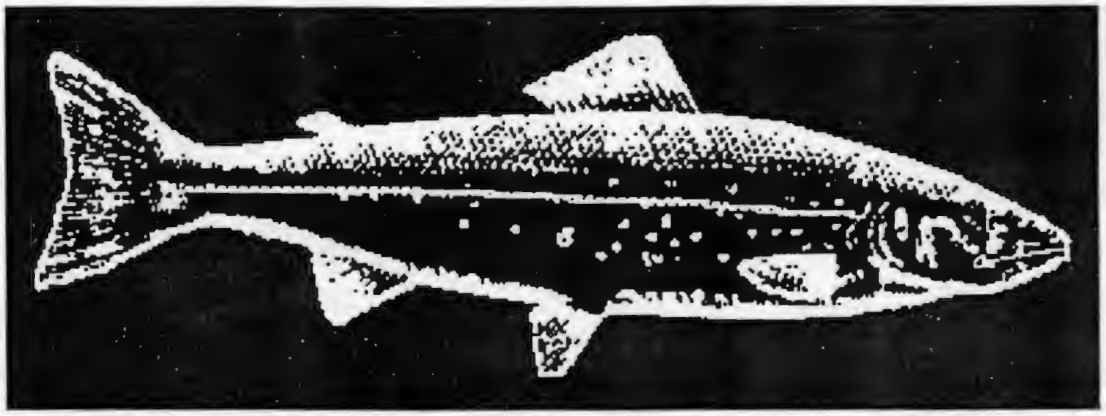
If defense lawyers are only doing their job by trying to poke holes in the police case, the same cannot be said of one of their legal advisers, Prof. Alan Dershowitz of the Harvard Law School. In a blunderbuss attack on police forces nationally, he has suggested that their training includes guidance on how to lie on the witness stand. That's got to be the broadest-brush paint job of the year.

Certainly police behavior in this city and elsewhere can be seriously deficient, as the Rodney King case showed. But to suggest widespread flouting of the law does a great disservice to the blue ranks we depend on daily. In an interview with The Times, Dershowitz urged that all "de-escalate the rhetoric and stop name-calling." We agree, and Dershowitz should follow his own advice.

Letters to The Times

o some extent remains, a program to con- rol food prices.

CALIFORNIA SALMON



ON THE VERGE OF EXTINCTION

Senate Committee on
Natural Resources and Wildlife
Tom Hayden, Chairman

California Legislature

Senate Committee
on
Natural Resources and Wildlife

CONSULTANTS
CHRISTOPHER WILEY
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TOM HAYDEN
CHAIRMAN

SENATE NATURAL RESOURCES AND WILDLIFE COMMITTEE

STATE CAPITOL, ROOM 4203

9:30 AM

February 14, 1995

"Are California Salmon on the Verge of Extinction?"

Frank Fisher, Associate Fisheries Biologist, Department of Fish and Game

Deborah McKee, Associate Fisheries Biologist, Department of Fish and Game

Felix Smith, Consulting Fisheries Biologist, Former Supervisor and Fish and Wildlife Biologist, U.S. Fish and Wildlife Service

Carla Bard, Former Chair - State Water Resources Control Board and Current Board Member of the San Francisco Bay Institute

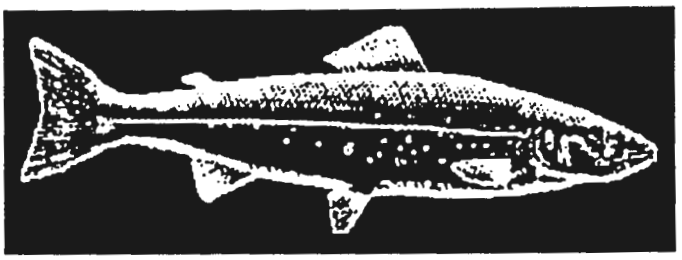
Bill Kier, Consulting Fisheries Scientist

Nat Bingham, President - Pacific Coast Federation of Fishermen's Associations

Dave Gardner and Will Bishop, California Fish and Game Wardens' Protective Association

Patrick Porgans, Resource Management Consultant

CALIFORNIA SALMON



ON THE VERGE OF EXTINCTION

By Senator Tom Hayden

The purpose of this hearing is to receive testimony on the critical decline of the California salmon.

Fifty years ago Governor Earl Warren exclaimed that California "should not relax" until we "put into operation a statewide program that will put every drop of water to work". At the same water conference, a Unitarian minister named Everett Pesonen replied that California should listen to "the voice of the salmon", whose survival would be threatened by those who only see water as a "sterile inanimate liquid". On the contrary, he said, the existence of salmon showed that water "is a medium in which life occurs", and planning of water use "must be expanded to include all the life-supporting values of water".

We are here today to examine whether our greed to use water to the last drop has been restrained enough to protect the California salmon. or whether we have threatened the extinction of salmon with our thirst for irrigation and overdevelopment.

Far from being doubled in numbers by the year 2000, the California salmon may well be doomed.

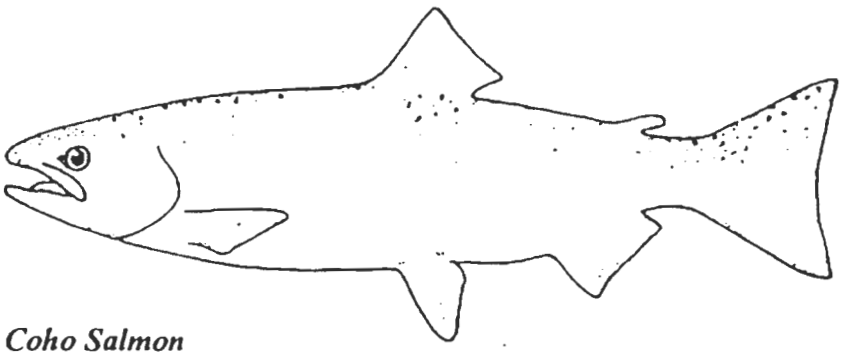
The decline of salmon is not only a California phenomenon. but is occurring at alarming rates on the Pacific and Atlantic coasts. A scary headline in the New York Times last year read "U.S. Fishing Fleet Trawling Coastal Water Without Fish". and reported that the salmon decline is "catastrophic--threatening to wipe out not only whole industries but culture and communities" (3/7/94). Just this month, new research indicated that remaining salmon are becoming smaller in 45 of 47 runs from California to Japan. The number of eggs per female is also continuing to shrink. "Biologists tend to blame human action, mainly the overgrazing of the ocean by billions of hatchery fish and fishing techniques that skim off big fish". (AP, 72-7/95)

Officially, both state (SB 2261, 1988) and the federal Central Valley Project Improvement Act state a goal of doubling the numbers of naturally-spawning California salmon by 2000 and 2002, respectively.

But nowhere in public policy is there a greater gap between words and deeds than in the flaunting of these mandates of the law.

Far from being doubled in numbers by the year 2000, the California salmon may well be doomed.

The statistics of decline are chilling. In 1969 there were 100,000 winter-run chinook counted in the Sacramento River. Between 1982 and 1988, counts averaged 2,334 adult fish annually, a 97 percent decline. The fish were "nearing extinction" according to studies published by the University of California in 1991, because of "conscious management decisions that demonstrated a lack of concern for the needs of the species".

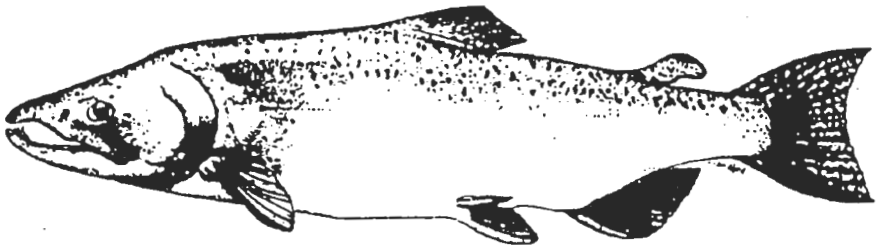


Coho Salmon

Other runs of chinook and coho are declining as well. Coho salmon have been petitioned for listing under the ESA. 1991 studies indicated that the spring chinook were "seriously depleted from historic levels and fast approaching the need for protection under the Endangered Species Act". UC expert Professor Peter Moyle now states that, from a biological standpoint, listing the

spring- and late-fall runs on the Sacramento River as endangered is clearly justified, and that the fall-run is in decline.

For a more vivid example, one should visit the Steinhart Aquarium in San Francisco where 261 chinook salmon circle in a large holding tank. A placard tells the public that the Aquarium is attempting "to preserve the genetic material of this imperiled



Winter run chinook salmon (Chris van Dyck)

salmon. We are only buying time until the (Sacramento) river improves. Like the condor, the last of this race will disappear in captivity unless we save their habitat".

A world without salmon would be a diminished world for humans. Not only would thousands of jobs and billions of dollars be lost in California's oldest industry, as a 1998 report by Meyer Resources, Inc. has pointed out. But the loss of salmon also would mean the loss of wild rivers and rich forests that salmon depend on.

Gone too would be the genetic intelligence that has allowed salmon to undertake an odyssey from their freshwater spawning

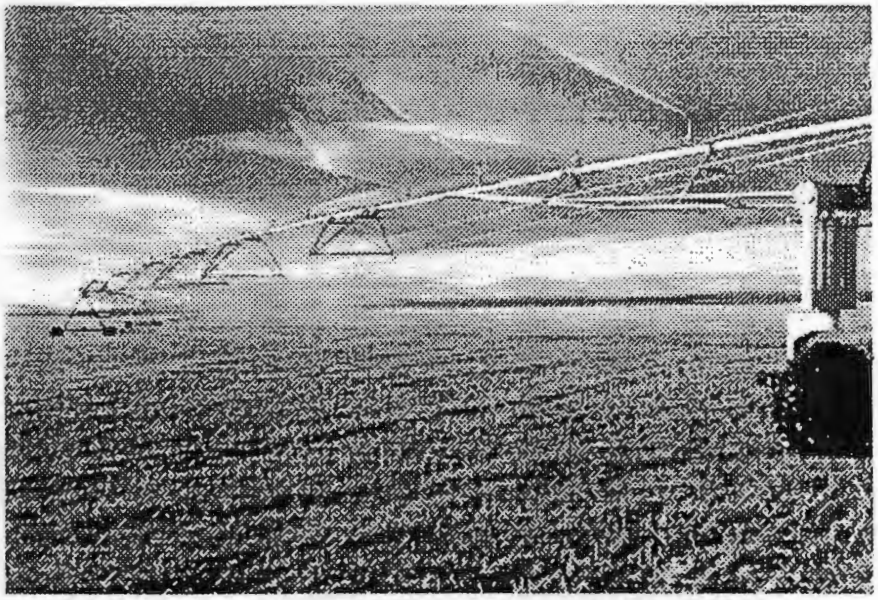
We are only buying time until the Sacramento River improves. Like the condor, the last of this race will disappear in captivity unless we save their habitat.

grounds to the vast ocean and back again to the same spot, to spawn again and die. A world without salmon would diminish the human imagination.

Salmon have been a source of inspiration for poetry and nature-writing for centuries, and they are considered sacred in many cultures. In Irish tradition, they originally were a god of wisdom.

The Yurok people considered the joining of the Klamath and Trinity Rivers as Qu'-nek, the center of the world. Among all coastal tribes from California to Alaska the seasonal cycle of the salmon was regarded with reverence.

Recently state and federal officials held a press conference in Sacramento to celebrate the Bay-Delta Agreement which, among other promises, claimed to provide more fresh water for several runs of salmon. With the press conference, the signatories claimed an "end to California's water wars".



This hearing will raise serious questions about whether salmon are indeed safe and the water wars are over. Announcement of the Bay-Delta Agreement was not accompanied by any scientific information on which its claims were based. There is nothing in the plan to achieve the goal of doubling the numbers of naturally-spawning fish by 2000-2002. The water promised in dry years is 400,000 acre feet short of what the State Water Board itself recommended in its 1988 draft salinity standards, which were dropped because of political pressure.

The Bay-Delta Agreement was not accompanied by any scientific information on which its claims were based.

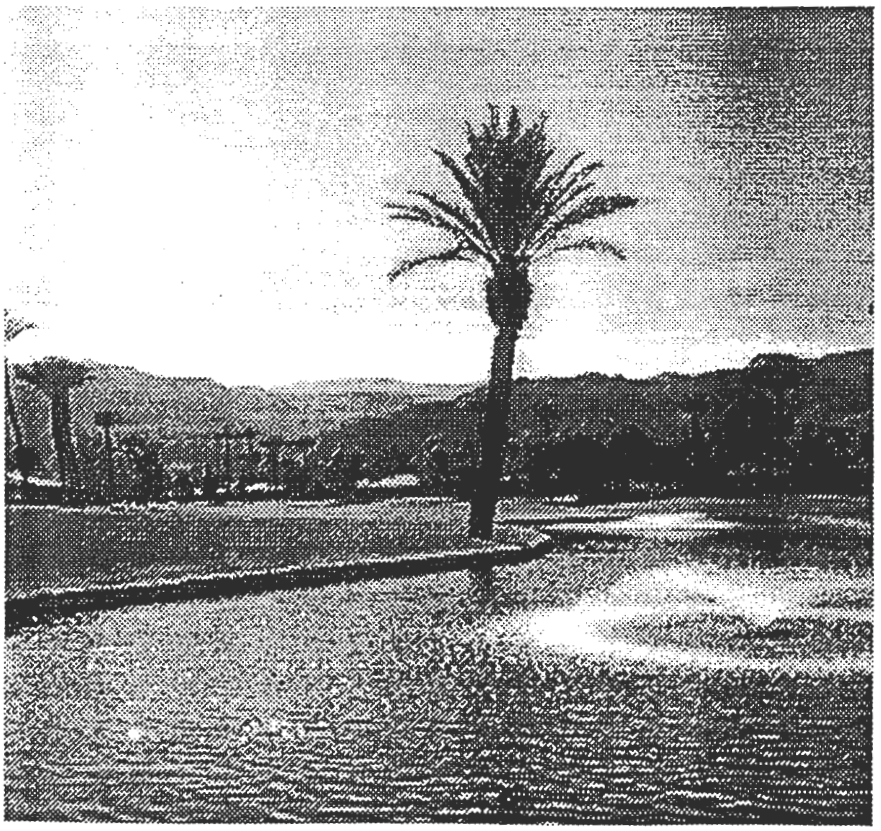
Many environmentalists and commercial salmon fishermen were unrepresented in the negotiations. The handful of environmentalists who did sign this unenforceable "statement of principles" have no guarantees that it will keep the Delta from going the way of Mono Lake.

This hearing also will examine whether the Endangered Species Act should be invoked to save California salmon. Currently only the

winter-run in the Sacramento River are listed as endangered, and that decision came only after years of public pressure and outcry.

When salmon are facing a threat of extinction it is no time to be thinking of weakening the Endangered Species Act. As Zeke Grader and Glen Spain of the Pacific Coast Federation of Fishermen's Associations have argued, "the ESA is the key to the watershed restoration and salmon protection throughout the region. It is also the only hope for putting a stop to onshore practices which destroy fishermen's livelihoods".

But weakening the ESA is clearly the agenda of our new leaders in Congress and a major priority of Governor Wilson as well. According to internal documents, the Governor plans to use execu-



tive orders as well as legislation to weaken the protections that the Endangered Species Act provides to salmon and other Species. For example, the Governor would exclude consideration of "habitat modification" from definitions of illegal "taking" of species that are threatened or endangered. But clearly salmon are doomed if their water is exported to southern California, if streams are silted by erosion, and if the Delta is filled with pesticide runoff.

Does Governor Wilson want to be known in history as the Governor who presided over the extinction of the California salmon? That is just the legacy his policies are risking unless there is serious reconsideration of the state's priorities.

As a first step, the Governor needs to give a clear signal to his fish and wildlife officials to disregard special interest pressures and do their jobs as independent professionals. It is widely believed, as the fish and game wardens own association has charged, that "political pressure from adversaries of the salmon upon the governor and the legislature cause the Department to discourage field personnel from enforcing the law".

I have asked Charles Warren, the distinguished former head of the President's Council on Environmental Quality, and former member of this legislature, to serve as Special Consultant to our committee on the Endangered Species Act. We will hold three to five public hearings on the Act to examine all grievances from all

Pete Wilson
Governor

Does Governor Wilson want to be known in history as the Governor who presided over the extinction of the California salmon?

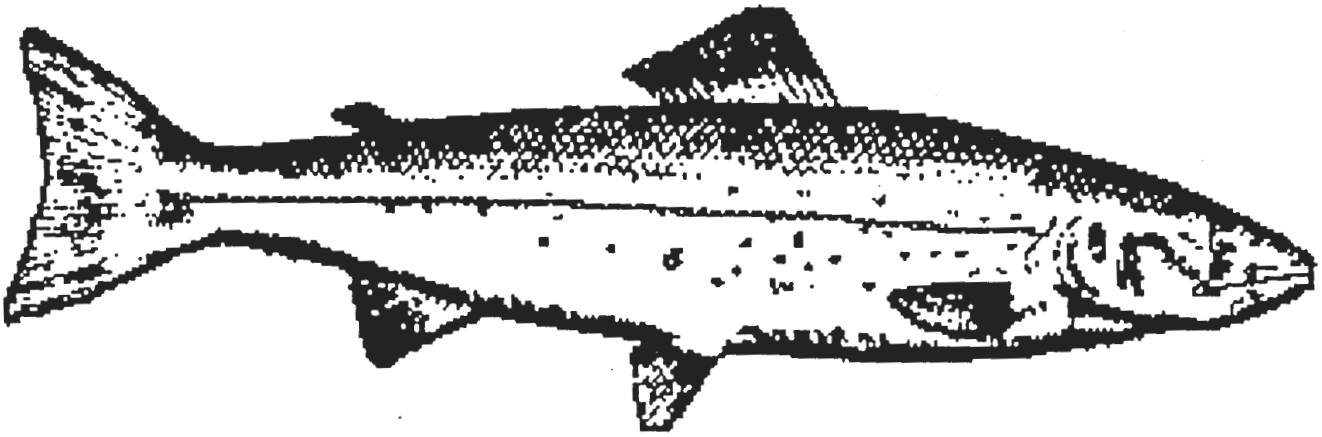
The Governor needs to give a clear signal to his fish and wildlife officials to disregard special interest pressures

After 25 years of study, it is time to question whether we are studying the salmon to death

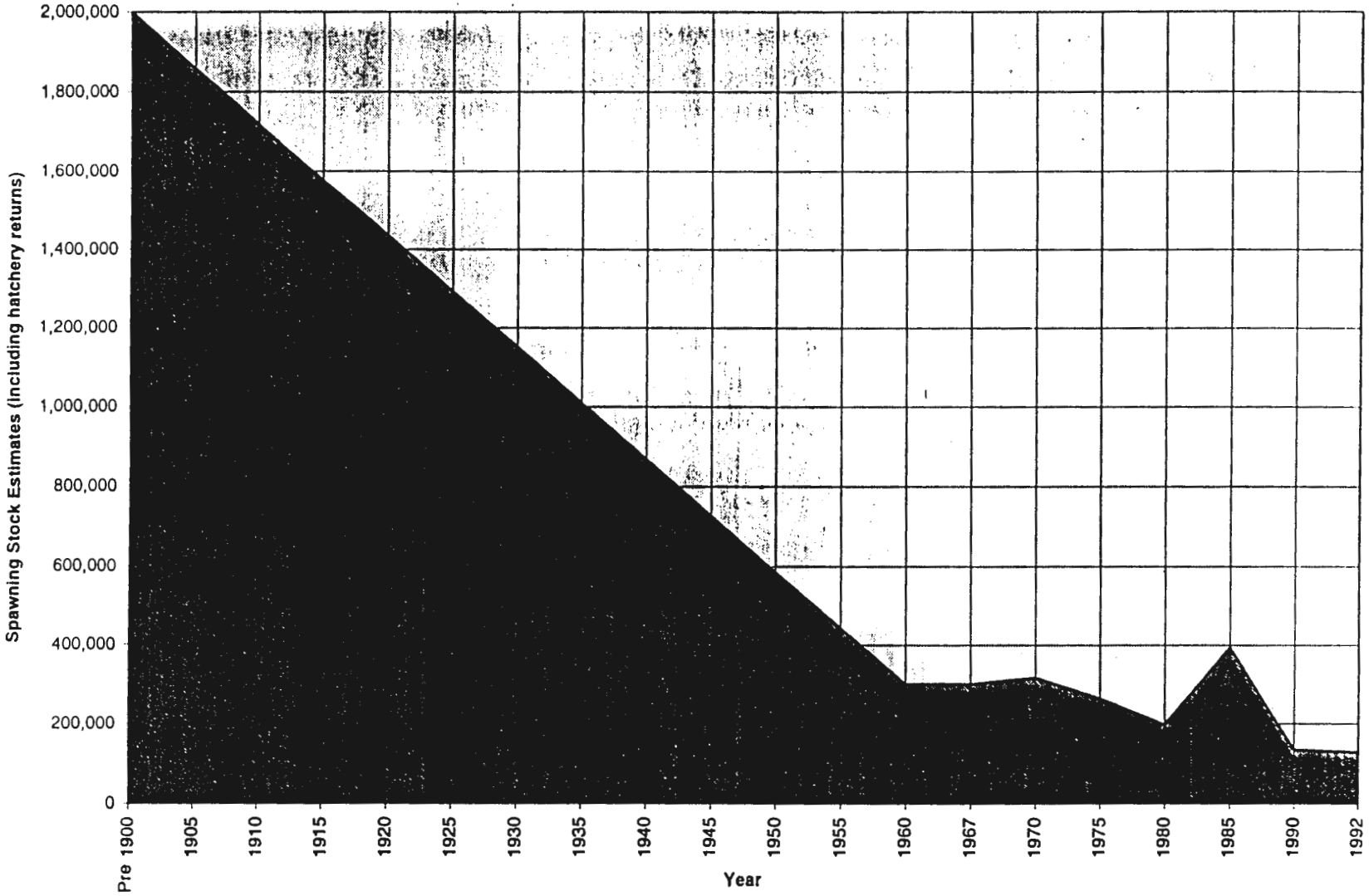
parties and find ways that the Act may achieve its intended goals more effectively.

After 25 years of study, it is time to question whether we are studying the salmon to death. In 1970 a citizen's advisory committee was formed to study salmon and steelhead declines. In 1971, the committee issued a report called An Environmental Tragedy, calling for habitat restoration. In 1972, there was a second report, A Conservation Opportunity. In 1975, the report was titled The Time Is Now. In 1982, a new Committee was formed. They published five more reports, including The Tragedy Continues. After the 1988 report, the state adopted the doubling of the population of salmon and steelhead by the year 2000 as an official goal. Twice the State Water Resources Board issued draft standards, in 1988 and 1993, but both times the draft plans were dropped because of pressure by water exploiters.

It is perhaps the last chance to face this issue now, before the streams and rivers of California are turned from spawning grounds to burial grounds of the last of the salmon.



CENTRAL VALLEY CHINOOK SALMON

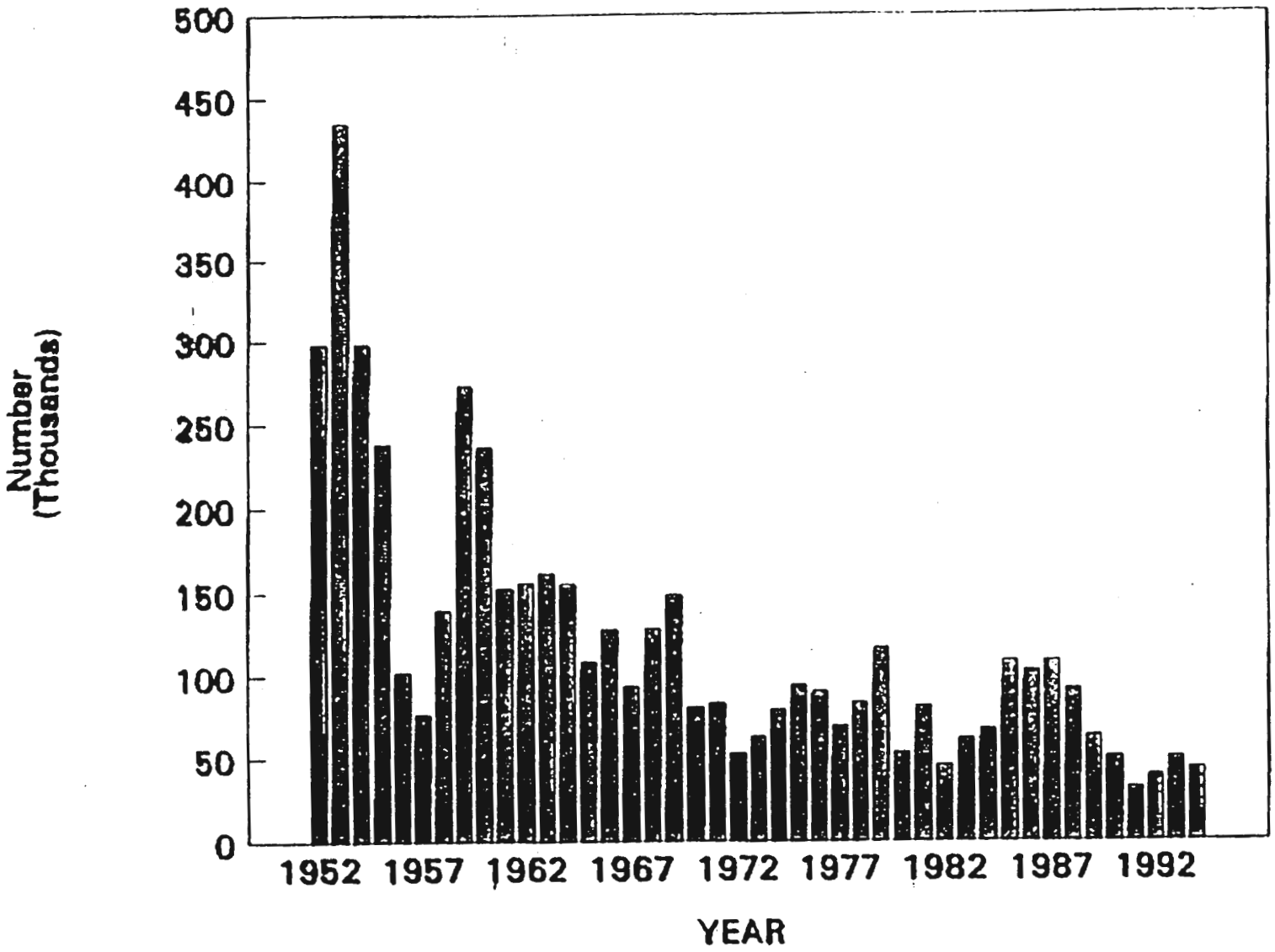


Spawning stock estimates for Pre 1900 to 1967 are an average of decline.

Prepared by
Senate Natural Resources & Wildlife Committee

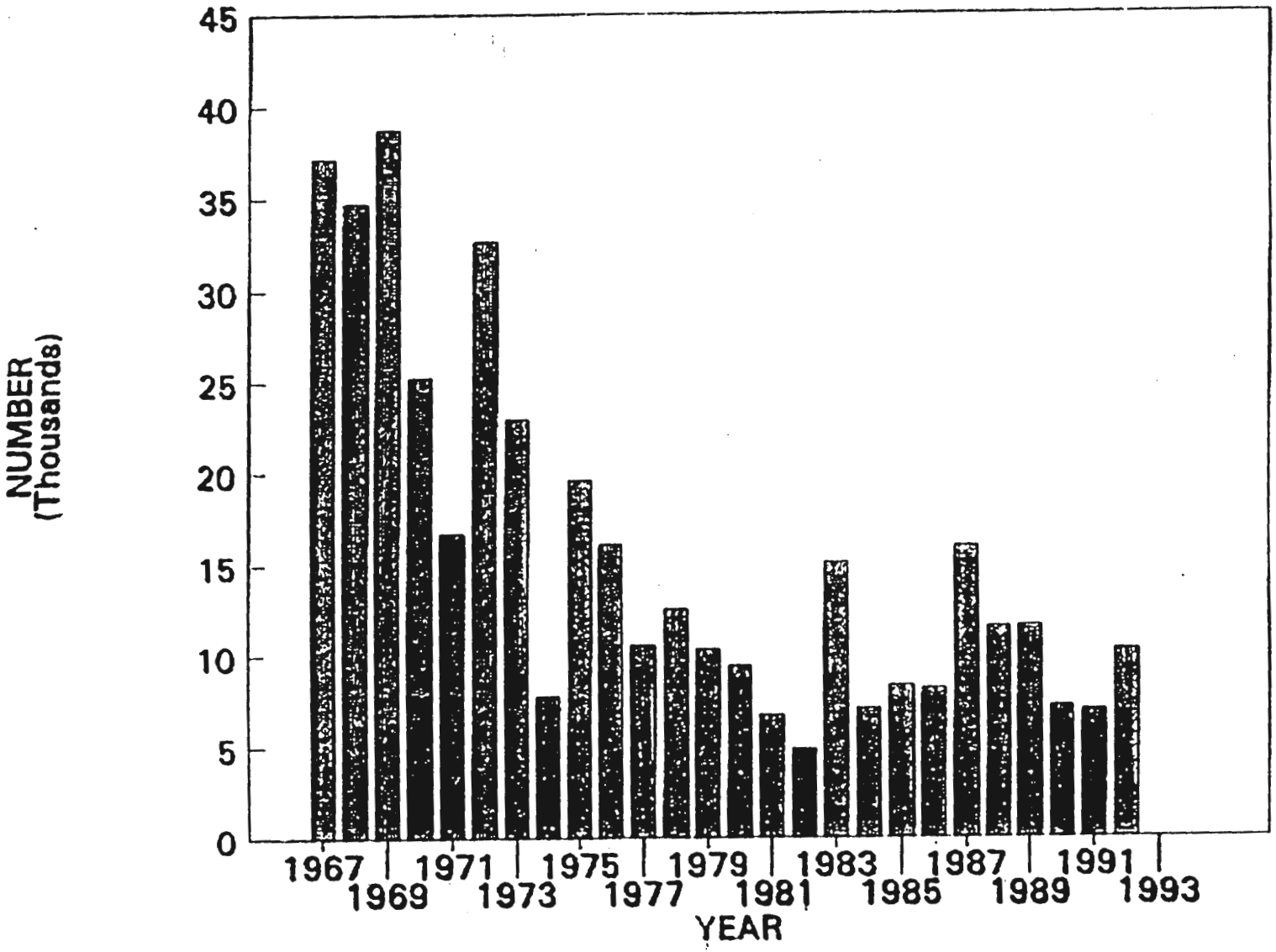
SACRAMENTO RIVER

Fall-run Chinook salmon escapement



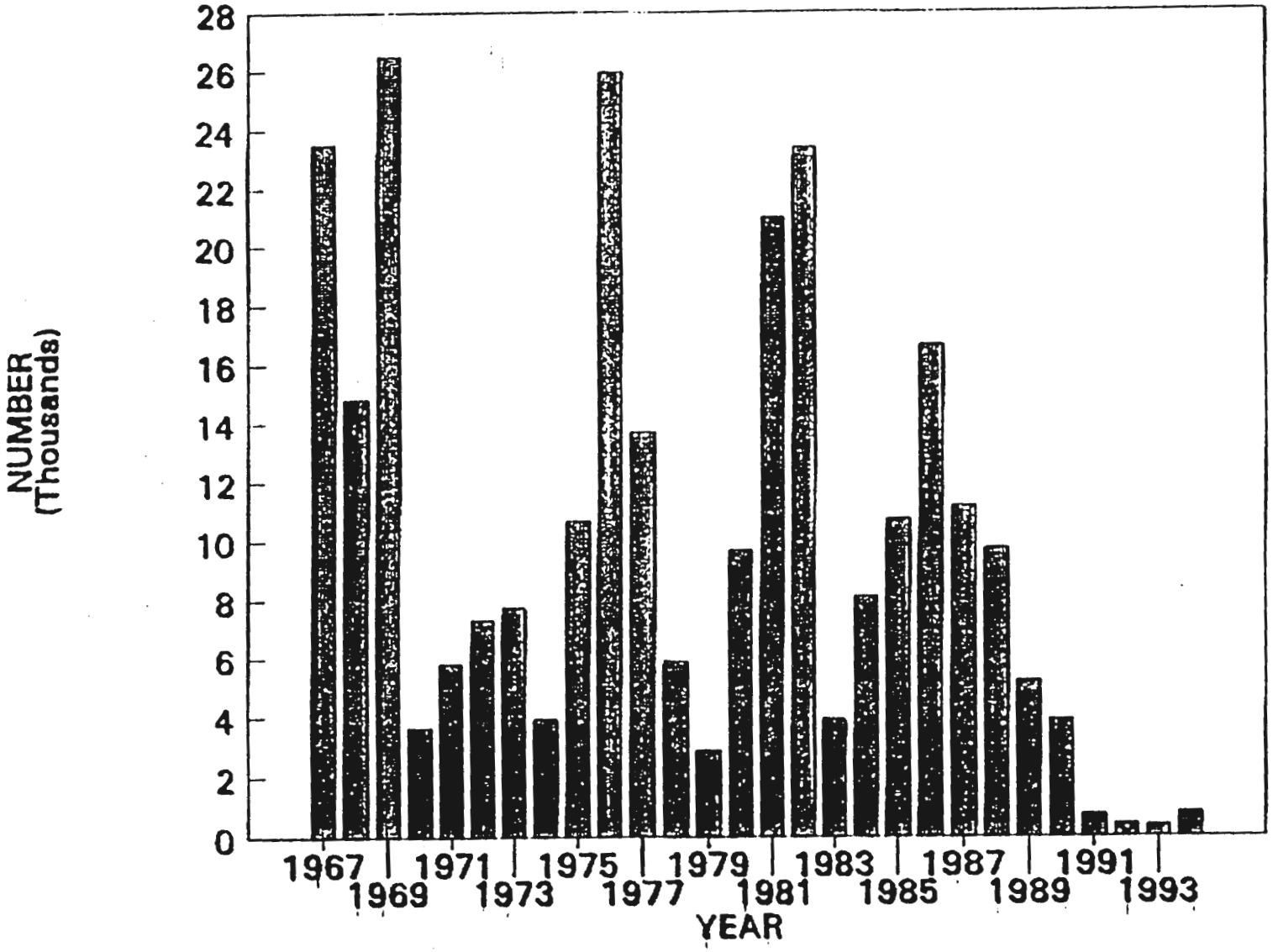
LATE FALL-RUN CHINOOK

PAST RED BLUFF



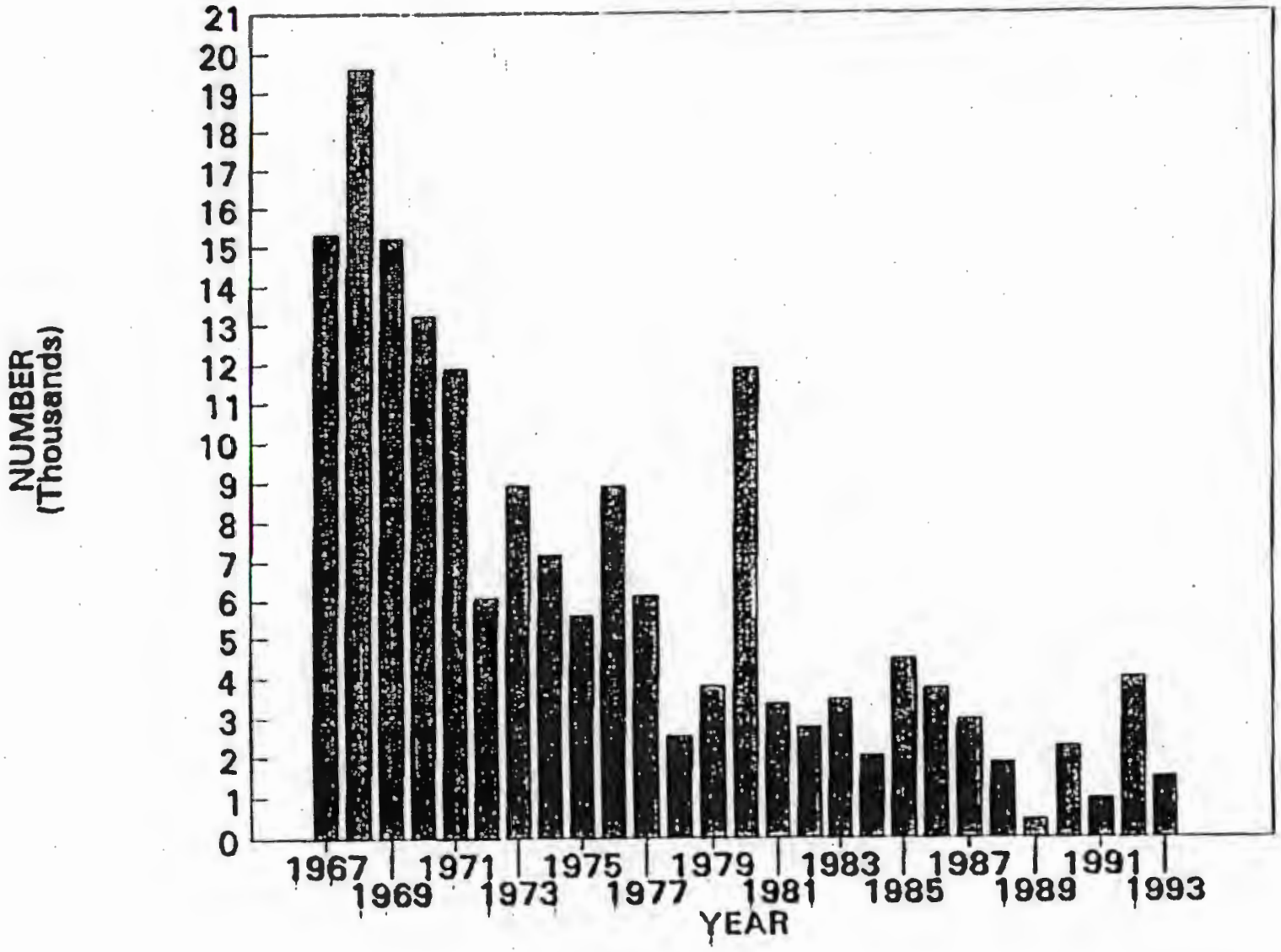
SPRING-RUN CHINOOK

PAST RED BLUFF



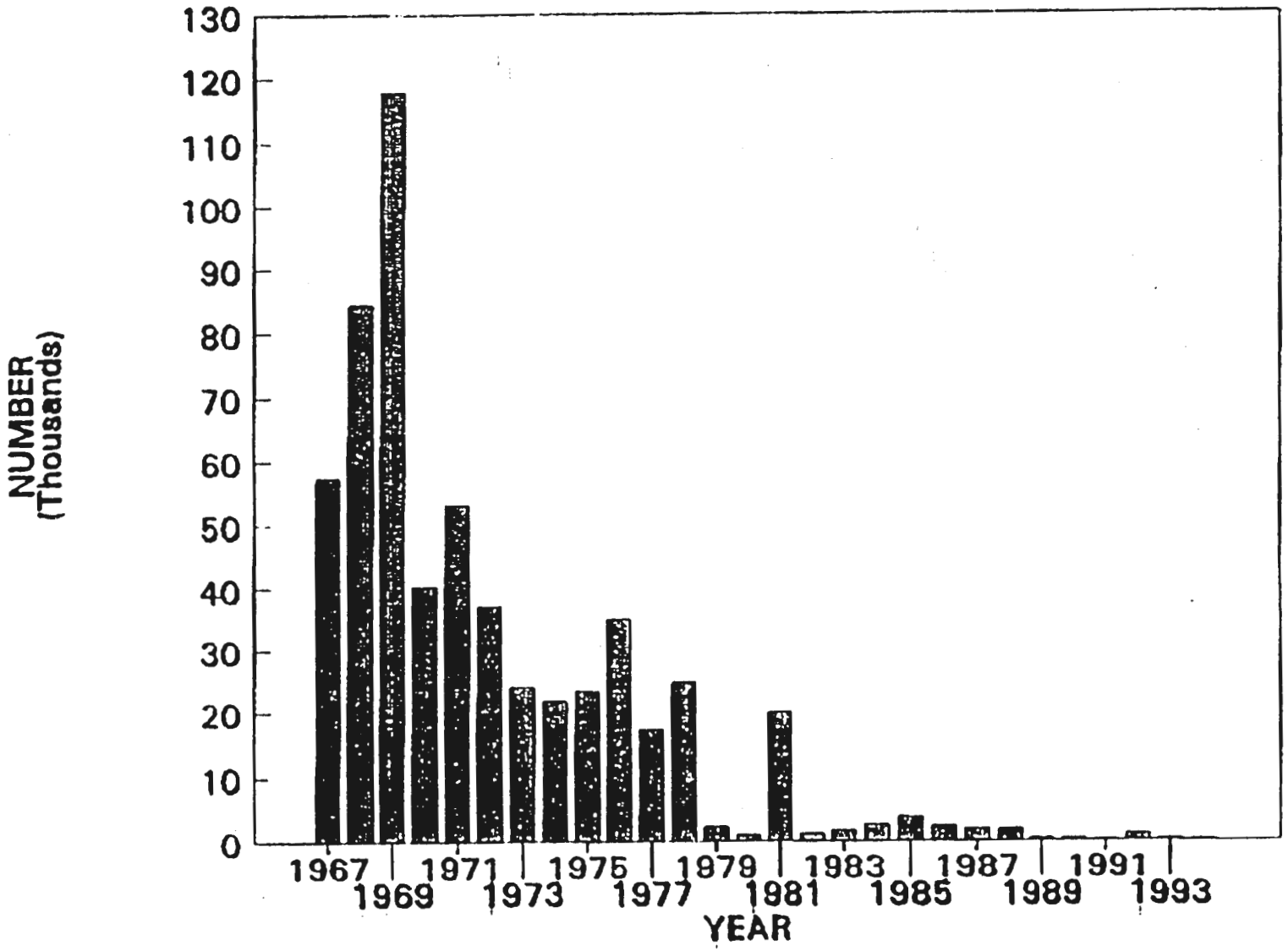
STEELHEAD TROUT

PAST RED BLUFF



WINTER-RUN CHINOOK

PAST RED BLUFF



Saving California's Salmon: The Legacy of Ishi

by Peter B. Moyle, Ph.D.

A leading expert in the conservation biology of fishes, the ecology of California stream fishes, and the effects of introduced aquatic organisms, Peter B. Moyle has authored or co-authored more than 100 publications, including seven books on fish ecology, and conservation. Dr. Moyle has taught at the University of California, Davis, since 1972, and was chairman of the department of wildlife and fisheries biology from 1982 to 1987. He received his Ph.D. in zoology from the University of Minnesota in 1969.

In 1911, Ishi, the last member of the aboriginal Yahi tribe, stepped into civilization from the rugged canyon of Deer Creek, in Northern California. He had grown up there, living with his family without contact with other people. Then the family camp was destroyed by a mining survey party and his family was dispersed to die. It is not a coincidence that the last spring-run chinook salmon in the vast Sacramento River drainage survive in that same rugged canyon and in two other nearby canyons. The steep volcanic walls that hid Ishi and the clear, cold creeks that sustained him have done the same for the salmon. And a similar tragic end is rapidly approaching them. Ishi died of tuberculosis contracted in the anthropology museum at the University of California, Berkeley; the last Sacramento spring chinook could eventually die of some common disease in a fish hatchery.

It is too late to save Ishi and his tribe, but the salmon that remind us of them will go extinct only if we allow them to go extinct. So far, we have done our best to make that happen. At one time spring Chinook were the salmon of the Sacramento and San Joaquin rivers, the two streams that drain California's great Central Valley. No one was counting salmon in the nineteenth century, but best estimates are that somewhere between 500,000 and one million spring Chinook entered the rivers every year. Not surprisingly, major fisheries developed in the rivers to supply the canneries that appeared, rapidly depleting the populations. However, the most lethal blows to the fish were given by dams and diversions which denied them access to their upstream holding and spawning areas. For example, the remaining run of 50,000 spring Chinook in the San Joaquin River was deliberately extirpated. In the words of George Warner, a biologist for the California Department of Fish and Game (CDFG) who witnessed the event:

> *In 1948, disaster struck. Friant Dam ... had been completed and the Bureau of Reclamation assumed control of the river ... Bureau officials diverted water desperately needed by salmon down the Friant-Kern canal to produce surplus potatoes and cotton in the lower San Joaquin Valley. Only enough water was released in the river to supply downstream canals and some of the pumps.*

CDFG crews managed to rescue nearly 2,000 of the salmon and truck them to the base of Friant Dam. Here the salmon held through the summer in the coldwater releases and spawned in the fall. When the juvenile salmon attempted to move out to sea, however, they got only as far as the dry stream bed on the valley floor. In the words of Warner: "The tragic conclusion to the history of the 1948 spring run was that the only beneficiaries of our efforts to salvage a valuable resource were the raccoons, herons, and egrets."

Today, the creeks in Ishi's country support only about 500 spring run spawners each year. A similar number is all that remain of the large runs that once existed in the Klamath River. Yet the plight of spring run chinook salmon is only the most spectacular of the declines of all anadromous fish in California. Even coho salmon, a widely dispersed, forest dependent species, is down to less than 5,000 wild spawners statewide, from an estimated 200,000 50 years ago. Its decline is directly related to the destruction of coastal watersheds by logging and road building.

The decline of coho and of spring Chinook in California is also tied to the simultaneous declines of other sea-run species and races, whose names make a litany of diversity and beauty: winter-run Chinook salmon, fall-run Chinook salmon, pink salmon, chum salmon, winter steelhead, summer steelhead, southern steelhead, green sturgeon, eulachon, longfin smelt, delta smelt, Pacific lamprey, and river lamprey. These fish have faded away despite promises of recovery of salmon and steelhead through hatcheries and weekend stream improvement programs.

Now even the memory of these fish is fading. There are few people in California who remember salmon so thick "you could practically walk across the stream on their backs" yet stream-packing runs were once common. Now we are rapidly losing the memories of days when a reasonably skilled angler could expect to hook 10 or 20 steelhead or coho in a day, fishing until the arms were too tired to cast a line. At least I have had the experience of snorkeling in cool pools of Ishi's canyon to see 30-40 spring Chinook slowly cruising about below me. My son and daughter have seen these same fish, but will the next generation? I doubt it, unless drastic

action is taken.

By "drastic action" I mean large scale, expensive action. The near-destruction of our anadromous fishes is the result of abuse of our land and waterways on a massive scale by a society with too much faith in technological solutions to environmental problems, too little view towards the future, and too little memory of what has been lost. Reversing this process cannot be done with hesitant, half-way measures. Our society will have to put back into the system some of the wealth it has carelessly extracted from it. Some of the needed action includes:

1. Operate state and federal water projects as if native fish mattered. In the past, the huge water projects built in the West treated fish as an afterthought. Salmon, after all, could be raised in hatcheries and exotic fishes in reservoirs could replace native fishes in streams. Surprisingly, in recent years major progress has been made to change this policy. The Miller-Bradley Bill, passed in 1992, tells the Bureau of Reclamation that one of its mandates in California is now to provide water for fish and wildlife: it allocates 800,000 acre feet per year for that purpose. The operation of Red Bluff Diversion Dam on the Sacramento River, a major salmon killer, has been modified to allow the fish safe passage. The dam may eventually be abandoned. Much still needs to be done, however. For example, water from Friant Dam (now treated as holy water by the agricultural interests) should be restored to the San Joaquin River to help keep the San Joaquin fall run chinook from going extinct and to provide more outflows through the estuary, necessary for passage of salmon smolts.

2. End double subsidies to California agriculture. Farmers in California receive federal water at cheap subsidized rates and often get crop subsidies as well. This system encourages waste of water and results in additional costs to society in terms of lost fisheries and water returned to the rivers laden with pesticides, fertilizers, and substances such as selenium. The double subsidy system has helped to create in California the most productive agricultural system in the world but it is a system with a short history and low long-term sustainability. If present trends continue, it is easy to envision vast dusty tracts of the San Joaquin Valley with soil too saline to be farmed and rivers without salmon or most other fish. Surely we can do better!

3. Manage National Forest lands as if fish mattered. The catastrophic decline of coho salmon and other fishes in streams of California's north coast is largely the result of watersheds being devastated by logging practices unsuitable for steep slopes and erodible landscapes. To reverse these trends, the remaining tracts of old growth forest should be protected, clear-cutting banned, and low-impact logging promoted. Recently, The Sierra Club Legal Defense Fund won a major court battle with the U.S. Forest Service, halting a timber sale on the South Fork of the Trinity River on the grounds that the increased sedimentation from logging activities would do further harm to the salmon and steelhead in the river. The fact that this case was so stubbornly fought by USFS indicates that, in the minds of many foresters, the short-term gains from logging still take precedence over long-term gains from fisheries. Even in the short run, economic analyses sponsored by the Sierra Club and the Wilderness Society indicate that lost fisheries are often more valuable than the value of the logging that caused the loss. Such studies should not even be necessary, because it should be possible to conduct logging in ways that do not harm, or that even promote, fish populations.

4. Begin a program of large-scale stream restoration. A study Dr. Larry Brown and I recently completed showed that nearly half of all streams that once contained coho salmon runs in California no longer do. The main reason the runs are gone is that the habitat for juvenile salmon is gone; shallow, braided, gravelly stream beds have replaced the deep shady pools and undercut, forested banks that the young coho require. Such streams cannot be restored by well-meaning volunteers installing a few logs and boulders on weekends. They require massive intervention in the degradation process, starting with erosion control measures in the headwaters and continuing with major channel modifying measures lower down. Hydrologist David

Photo: Bill Pinkham

Coho salmon

Rosgen, one of the main practitioners of radical restoration efforts, advocates whole stream approaches in which the restoration process harnesses the energy of the stream, rather than working against it through rip-rapping and other band-aid techniques. Rosgen-style restoration, however, requires lots of person-power and heavy equipment, so is very expensive in the short run. It is arguably much cheaper in the long run, of course, because it offers more permanent solutions to the problems. This is obviously an opportunity for a large public works program that could employ some of the fishermen and loggers put out of work as the result of failed public policy in the past. Such a program could help sustain the local economies until fisheries are restored and sustainable timber harvest is practiced.

5. Place a temporary ban on the harvest of wild salmon and steelhead. This recommendation is painful to make because it hurts people most who are not the ultimate cause of the problem. Yet wild populations are in such bad shape that continued fisheries are probably preventing or delaying their recovery. A compromise of sorts is to mark all fish produced in hatcheries and allow only marked fish to be taken by both commerical and sport fishermen. Marking millions of hatchery fish will be expensive and allowing continued fishing will result in some mortality of wild fish. But at least this policy would allow people to continue to fish, helping to keep fishing traditions and skill alive. One of my biggest concerns about shutting down fisheries is that by doing so we may lose some of the strongest advocates of environmental restoration, the fishermen.

PHOTO NATALIE A FOBES

This hillside is beginning to slide due to improper logging. Cascade Mountains, WA.

6. Develop a coherent, integrated policy on fish hatcheries for the Pacific Northwest. We need a hatchery policy that recognizes that ocean-going fish do not recognize state boundaries, that hatchery production can have a negative effect on wild salmon and steelhead populations, and that there are hundreds of localized strains of fish that need special management. In practice, what this policy could mean is an integrated system of three kinds of hatcheries: large scale production hatcheries, experimental hatcheries, and temporary streamside hatcheries.

Production hatcheries are needed to maintain commercial fisheries; we have simply irreversibly lost too much upstream habitat to think we can rely on wild production to support fisheries, at least in the foreseeable future. We need to be thinking creatively, however, about the kind of fish raised in the hatcheries. What we need are fish that are easy to recognize as hatchery fish, segregate from wild fish for easier harvest, and have low probability of reproductive success in the wild. These are already the basic characteristics of hatchery trout, which often allow wild trout fisheries and put-and-take domestic trout fisheries to coexist. Why not genetically engineer (or simply breed) salmon that have peak runs at different times than wild fish, or that are sterile, or that have hereditary markers? Rather than disdaining domesticated fish, we should recognize that they can have a place in salmon management schemes.

Experimental hatcheries are needed not only for research to support production hatcheries, but as places where endangered species and races of fish can be reared for their entire life cycle. This can help to keep endangered forms from dying out while habitat is being restored or while the status of wild populations is uncertain. Such a program is now underway for winter-run Chinook salmon from the Sacramento River, although the facilities are ad hoc (Bodega Marine Laboratory, Steinhart Aquarium) rather than specially developed for the purposes of conservation. Unfortunately for the winter-run Chinook, there is no real "natural" habitat to which to return, only the regulated flows of the Sacramento River and patches of gravel dumped into the river for their spawning.

Temporary streamside hatcheries will probably be vital for the recovery of many depleted runs of salmon and steelhead, especially coho salmon. The idea is to have a small facility located on or near a stream that concentrates on enhancing a declining natural run until the run is once again self-sustaining or until habitat restoration efforts are completed. The key is the temporary nature of the facility; if it has to be maintained for more than 10 or 15 years, then it has failed in its mission. In California, one of the few bright spots in the coho salmon story is Lagunitas Creek, Marin County, where a temporary hatchery sponsored by Trout Unlimited, coupled with watershed management efforts, has resulted in an expanding coho population.

7. Keep the federal Endangered Species Act strong and healthy. The ESA is the most powerful piece of environmental legislation we have. Of the anadromous fishes in trouble in California, only two (winter-run Chinook and delta smelt) have been formally listed. A number of others clearly qualify for listing, including spring Chinook. This does not mean that we should automatically list every qualified species. In fact, listing should be avoided if possible because the ESA automatically engenders controversy and confrontation. I do think that using the ESA to prod agencies and private interests to work together to solve problems with our anadromous fishes is a good strategy, however. Coho salmon, for example, would benefit from multiagency recovery efforts but these are likely to come about much more quickly if it is made very clear (as has happened) that a petition is ready to be filed. Such a petition is already available for California coho populations and a state petition has been filed for the two southernmost populations in Santa Cruz County (including the famed Waddell Creek where the classic studies on coho spawning behavior were done).

8. Make environmental education

an integral part of our school systems. Except for volunteer efforts, environmental education has been cut from (or never developed in) most of our elementary and secondary schools. As a consequence, our kids usually know more about dinosaurs than they do about salmon or local natural history (Is *Oncorhynchus* any more difficult to learn than *Tyrannosaurus*?). If we do not teach our children what natural wonders they have now and what they are missing, there is little hope for our salmon and steelhead. The Clinton Administration has proposed national service in exchange for government payment of college bills. What could be a better use of enthusiastic, fresh college graduates than to teach children about salmon (and other aspects of the environment)?

In short, if the spring Chinook of Deer Creek are not to go the way of Ishi, the last of the Yahi, and if coho salmon are going to continue to spawn in Waddell Creek, then we need large-scale intervention in the processes that degrade streams and watersheds. Implementing such a program will be a major test of the sincerity of the Clinton Administration and the Congress in working towards a sustainable future.

Documentation for the information and ideas in this paper can be found in Alan Lufkin's California's Salmon and Steelhead: The Struggle to Restore an Imperiled Resource *(1991; Univ. Calif. Press, Berkeley. This is the source of the quotes by George Warner), in P.B. Moyle and R.M. Yoshiyama* Fishes, Aquatic Diversity Management Areas, and Endangered Species: A Plan to Protect California's Native Aquatic Biota *(1992; $20 from California Policy Seminar, 2020 Milvia St. Berkeley CA 94704), and in P.B. Moyle, J.E. Williams, and E. Wikramanyake* Fish Species of Special Concern of California *(1989; $30 from California Department of Fish and Game, 1416 Ninth St., Sacramento, CA 95616; revised edition should be out in late 1993). A more general account of fish ecology and conservation can be found in P. B. Moyle* Fish: An Enthusiast's Guide *(1993, University of California Press).*

Past and Present Status of Central Valley Chinook Salmon

California's Central Valley chinook salmon populations are a fragment of their former abundance. Water development for hydroelectric production, irrigation, domestic water supplies, and flood control has restricted or eliminated much of the natural habitat formerly occupied by Central Valley salmon. Much of the species historical habitat has been replaced by hatcheries. Where certain runs are difficult to domesticate for hatchery culture, only isolated population remnants remain.

Adult chinook salmon in the ocean and juveniles in

freshwater are very similar anatomically and morphologically. Only adult salmon, returning to spawn and completing their life cycle, exhibit radical differences among individuals. Therefore, Central Valley salmon runs have been vaguely defined based upon migration timing and inconsistent reports of spawning times. Stone (1874) described three runs of salmon in the Sacramento River: spring, summer (fall), and winter runs based upon their appearance in tide-water. A fourth run, late-fall, was described by Fry (1961) after large numbers of mid-winter spawning chinook salmon were trapped during Keswick operations of Coleman National Fish Hatchery. In 1967, with completion of the Red Bluff Diversion Dam and the associated fish trap, salmon migration and spawning timing at Red Bluff was determined from aerial and spawning ground surveys. Although there is considerable overlap within migration times between each run, spawning occurs at distinctly different times. Therefore each run is temporally isolated from each other, with the exceptions of overlap between fall and spring runs. Formerly fall and spring runs were spatially isolated from each other with spring run occupying the headwaters and fall run occupying the lower portions of streams near the valley floor. Cope and Slater (1957) questioned the genetic integrity of spring and fall runs after forced coexistence in the Sacramento River below Shasta Dam indicated hybridization had occurred. They concluded, from marking experiments, that each run tended to return at their appropriate time but some mixing had occurred. Slater (1963) later concluded that serious hybridization was taking place between the fall and spring runs, with fall run out-competing spring run for available spawning habitat in the Sacramento River. Other evidence based upon recent coded-wire tag returns from Feather River Hatchery indicate that current hatchery practices, using arbitrary spawning dates, leads to a significant amount of mixing between these runs.

Other unique biological characteristics further define Central Valley Chinook salmon runs (Table 1). Winter and spring runs are particularly vulnerable to catastrophic events because of the nearly singular age at maturity and because there is little contribution by older-year classes. The dominance of three-year-old females results in reduced population fecundity and places these runs at risk if changes in egg or juvenile mortality increase or excessive exploitation takes place.

All of the Central Valley salmon runs have incurred permanent habitat losses of varying amounts. In 1872 Stone (1874) observed that the absence of salmon in the American, Feather, and Yuba Rivers was due to poor water quality from intense mining activity. Although hydraulic mining was abolished in 1884, these rivers were later recolonized by salmon for only a short time before water development activities permanently cut off access to the spawning grounds. From 1900 to 1930 hydroelectric development and irrigation projects truncated large portions of the headwaters of most Central Valley rivers by dam construction. By 1928 Clark (1929) estimated 510 lineal miles remained of the original 6000 miles, an 80% reduction of principally spring-run spawning area. With completion of the Friant Dam in 1942, spring-run salmon were eliminated from the San

Table 1. Descriptive characteristics of Central Valley salmon runs.

Characteristic	*Late Fall Run*	*Winter Run*	*Spring Run*	*Fall Run*
Migration period	October–April	December–July	March–July	June–December
Peak migration	December	March	May–June	September–October
Spawning period	early January–early April	late April–early August	late August–early October	late September–December
Peak spawning	early February	early June	mid-September	late October
Average percent grilse	11%	22%	24%	20%
Percent female at:				
Age 2	2%	1%	2%	5%
Age 3	57%	91%	87%	77%
Age 4+	41%	8%	11%	20%
Average population fecundity	5806 eggs	5743 eggs	4895 eggs	5498 eggs
Juvenile emergence period	April–June	July–October	November–March	December–March
Juvenile residency	7–13 months	5–10 months	3–15 months	4–7 months
Ocean entry	October–May	November–May	March–June & November–March	March–July
Juvenile size at ocean entry	160 mm (F.L.)	120 mm (F.L.)	80 mm (F.L.)	80 mm (F.L.)
Former spawning habitat	Upper mainstem rivers	spring-fed streams	headwaters	lower rivers and tributaries

Joaquin drainage. Simultaneously, the Shasta Dam on the Sacramento River eliminated an estimated 200 miles of spring-run habitat and nearly all winter-run spawning grounds. Only Mill, Deer, and Butte Creeks remain to support remnant populations of spring run and none of the original spring-fed habitat is useable or available to winter run. Winter-run salmon were displaced into the Sacramento River downstream of the Shasta Dam where water temperatures were initially suitable for successful reproduction. However, Moffett (1949) forewarned of changes in water temperatures after the Central Valley Project became fully operational and during drought periods. Water temperatures became unfavorable for successful spawning during 1976–1977 and recent droughts.

Late-fall salmon were formerly present in the San Joaquin River (Hatton and Clark 1942) and the Sacramento River system (Hanson et al. 1940). The original late fall–run spawning grounds were apparently located at the northern and southern extremes of the valley floor where summertime water temperatures afforded suitable juvenile rearing conditions. The Friant Dam eliminated the San Joaquin habitat for late fall–run salmon and the Shasta Dam altered the Sacramento River. Of the four salmon runs, the fall run has been least affected by dam construction. The fall run is the most cosmopolitan run in the Central Valley, occupying the lower reaches of most tributary streams and valley floor rivers where suitable spawning gravel is present. Overall, most of the historical range for fall run remains except for the San Joaquin River and a portion of the Sacramento upstream of the Shasta Dam. However, conditions throughout the San Joaquin drainage have been severely altered by water projects, and salmon production is strongly related to spring flow conditions (Kjelson & Brandes 1989). Kjelson and Brandes (1989) also found that habitat changes due to water development in the Sacramento–San Joaquin Delta significantly affected Sacramento River stock, with fall-run smolt survival being highly correlated to river flow, temperature, and percent of inflow diverted.

Annual landings from the Sacramento–San Joaquin gill-net fishery may provide an insight into the history of Central Valley salmon runs (Clark 1929; Clark 1940; Skinner 1962). By 1870 a gill-net fishery was already well established with markets developed for fresh salmon and an expanding canning industry. Salmon fishing initially was concentrated primarily on winter and spring runs because of their fresh appearance and excellent condition with fall run of limited value because of their advanced spawning condition (Stone 1874).

A run index, based upon limited monthly landing records and known migration characteristics for each run, was developed that indicates the relative catches for each run by decade (California Fish Commission 1882, 1900; Clark 1940). Up until 1900 spring run dominated the catches with fall run being of secondary importance. This decline in spring run closely parallels the reduction of habitat at the turn of the century and increased emphasis on fall run hatchery production (Shebley 1922). Applying the developed run index to annual landings and assuming that one half of the winter and spring runs were harvested each year provides an estimate of run size (Fulton 1968). I used a harvest rate of one third for late fall and fall runs because of their inferior quality and limited harvest by the early fishery. Using this approach, although circumspect, provides an abundance index for each of the four Central Valley runs before the twentieth century. It is possible that maximum spawning runs, including harvest, may have approached 2,000,000 fish, comprising 100,000 late fall–, 200,000 winter-, 700,000 spring-, and 900,000 fall-run salmon.

Recent population estimates for the Central Valley indicate a substantial reduction in spawning salmon taking place within the past two decades, mainly on late-fall and winter runs (Table 2). Wild spring run populations in Mill and Deer Creeks show a continuing decline with fluctuating populations present in Butte Creek. A possible listing of spring-run salmon under the Federal Endangered Species Act is imminent. Only fall-run salmon continue to maintain reasonable, although low, spawning runs that are heavily supported by hatchery production.

Table 2. Total Central Valley chinook salmon spawning stock estimates, including hatchery returns, 1967–1992.

Year	*Late-fall Run*	*Winter Run*	*Spring Run*	*Fall Run*	*Total*
1967	37,208	57,306	23,840	182,828	301,182
1968	34,753	84,414	15,360	211,371	345,878
1969	38,752	117,808	27,447	322,475	506,482
1970	25,310	40,409	7672	244,145	317,536
1971	16,741	63,089	9274	241,958	331,062
1972	32,651	37,133	8652	154,665	233,101
1973	23,010	24,079	11,967	273,880	332,936
1974	7855	21,897	8281	236,228	274,261
1975	19,659	23,430	24,044	197,789	264,922
1976	16,198	35,096	26,786	196,189	274,269
1977	10,602	17,214	13,951	185,390	227,157
1978	12,586	24,862	8358	158,198	204,004
1979	10,398	2364	2960	229,143	244,865
1980	9481	1156	11,937	175,370	197,944
1981	6807	20,041	21,784	265,752	314,384
1982	4913	1242	28,082	240,108	274,345
1983	15,190	1831	6193	220,651	243,865
1984	7163	2665	9923	264,488	284,237
1985	8436	3962	13,055	368,942	394,395
1986	8286	2464	20,329	293,399	324,478
1987	16,049	1997	12,720	276,646	307,402
1988	11,597	2094	18,486	275,576	307,753
1989	11,639	533	12,266	172,778	197,216
1990	7305	441	6630	119,832	134,208
1991	7089	191	5944	127,119	140,343
1992	10,370	1180	2997	113,948	128,495

The Decline of Anadromous Fishes in California

California contains the southernmost populations of a majority of the anadromous fishes of the Pacific coast of North America. The fact that all of these southern populations are in decline indicates that large-scale environmental changes are taking place, especially in river systems. The native species in decline include river lamprey, *Lampetra ayersi*, Pacific lamprey, *Lampetra tridentata*, green sturgeon, *Acipenser medirostris*, white sturgeon, *A. transmontanus*, delta smelt, *Hypomesus transpacificus*, longfin smelt, *Spirinchus thaleichthys*, eulachon, *Thaleichthys pacificus*, chinook salmon, *Oncorhynychys tshawytscha*, coho salmon, *O. kisutch*, pink salmon, *O. gorbuscha*, chum salmon, *O. keta*, rainbow trout (steelhead), *O. mykiss*, and coastal cutthroat trout, *Oncorhynchus clarki clarki*. In addition, two introduced species, striped bass, *Morone saxatilis*, and American shad, *Alosa sapidissima*, are in severe decline in the state.

Of the six *Oncorhynchus* species, pink salmon are already extinct in the state, chum salmon are reduced to three small populations, and coho salmon probably qualify for threatened species status. Only fall run chinook salmon and winter run steelhead still support real fisheries (albeit greatly reduced and dependent on hatchery fish); other runs of these two species are already listed as endangered or qualify for threatened status. Cutthroat trout distribution coincides with that of coastal rainforest and its populations are greatly depleted as a consequence.

The universal decline of anadromous fishes in California reflects the general decline in the quality of aquatic environments. However, each species may be declining for a different combination of anthropogenic reasons in conjunction with a period of naturally stressful conditions in both fresh and salt water. In an attempt to evaluate the relative importance of various factors affecting the fish populations, I lumped them into nine categories (Table 1):

1. **Watershed degradation**, encompassing the effects of logging, road construction, overgrazing, and urbanization;
2. **Diversions**, anything reducing or altering the flow of streams, such as large dams and irrigation diversions;
3. **Pollution**, toxic substances of all kinds;
4. **Overfishing**, excessive harvest by sport, commercial, and subsistence fisheries;
5. **Hatcheries**, negative effects of hatchery fish on wild populations;
6. **Oceanic conditions**, negative effects of changed oceanic conditions, e.g., el Niño effects, decreased coastal productivity;
7. **Precipitation**, negative effects of increased variability in precipitation in recent years, especially droughts;
8. **Predation**, negative effects of enhanced predator (e.g., marine mammals, introduced fishes) populations on declining wild stocks;
9. **Other factors**, including altered food supply (smelt, lampreys).

Table 1. Relative importance of factors contributing to the decline of anadromous fishes in California. Subjective scores for each species range from 1 (major cause of decline) to 5 (not a cause).

Species	Water Degradation	Diversions	Pollution	Overfishing	Hatcheries	Ocean Conditions	Precipitation	Predation	Other
River lamprey	1	3	3	4	4	3	2	2	3
Pacific lamprey	1	2	3	4	4	3	2	2	2
White sturgeon	3	2	3	2	4	4	2	4	4
Green sturgeon	2	2	3	1	4	3	2	4	3
Delta smelt	3	1	3	4	4	4	2	3	2
Longfin smelt	2	1	3	4	4	3	2	2	2
Eulachon	2	2	4	3	4	2	3	2	4
Chinook	1	1	3	2	2	3	2	2	3
Coho	1	1	3	2	1	2	2	3	3
Pink	2	3	4	4	4	2	2	2	2
Chum	1	3	4	4	4	2	2	2	2
Steelhead	1	1	2	2	2	3	2	2	3
Cutthroat trout	1	3	4	3	3	2	2	3	3
Total points	21	25	42	44	45	43	27	33	34
Rank	1	2	6	8	9	7	3	4	5

For each species each factor was rated on a subjective 1–4 scale, where 1 indicates the factor was probably a major cause in the decline of the species; 2 a moderate contributing factor to the decline; 3 a minor cause; or 4 had no effect on the species. The scores for each factor were added and ranked from lowest to highest, with the lowest scores indicating the factors with the highest overall impact on anadromous fish populations. Watershed degradation, diversions, and variation in precipitation were ranked 1, 2, and 3, respectively (Table 1).

Decisions being made now will determine which species and stocks will become extinct in California in the near future and what segments of the original gene pools will be in existence for future use and evolution. It is possible that California stocks may be especially vulnerable if warming trends push oceanic and stream conditions to which salmonids are adapted further north. Conservation of California's anadromous fishes requires a systematic program of ecosystem protection (Moyle & Williams 1990; Moyle & Yoshiyama, 1994).

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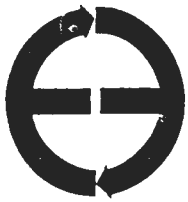

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FUTURE OF THE CALIFORNIA ECONOMY AND THE BAY-DELTA ACCORD

JUNE, 1995

The California Council for Environmental and Economic Balance (CCEEB) is a private nonprofit, nonpartisan coalition dedicated to developing programs that benefit both the environment and the economy. Formed in 1973, and first led by former Governor Edmund G. "Pat" Brown, the Council is composed of principal representatives of industry, organized labor and the public sector who work to achieve innovative solutions to critical environmental issues. The Council focuses on issues relating to air quality, hazardous materials and waste management, and state and local governance. This paper was prepared for the use of Project CPR: California Prosperity thru Reform. Any views expressed are not necessarily the views of the project or project members. For information about participating in Project CPR or CCEEB, or to obtain additional copies of this paper, please contact the Council at 100 Spear Street, Suite 805, San Francisco, California, 94105, (415) 512-7890.

FUTURE OF THE CALIFORNIA ECONOMY AND THE BAY-DELTA ACCORD

EXECUTIVE SUMMARY

On December 15, 1994, Governor Pete Wilson and Secretary of the Interior Bruce Babbitt announced a historic agreement with major implications for California's most precious natural resource, water. The agreement, called *The Bay-Delta Accord*, contained principles for environmental protections for the San Francisco Bay-Sacramento/San Joaquin Delta (Bay-Delta), the heart of California's elaborate water system and the location of key ecological resources. This Accord was fashioned by leaders from virtually all water interests and the collaboration stimulated by active involvement of business leaders broke the decades long pattern of gridlock that has characterized California's water policy and water politics. The interests included state and federal resources agencies, urban and agricultural water interests, environmental organizations, and business groups. [Earlier this year, three of the individuals who led this collaborative effort were awarded the coveted Edmund G. 'Pat' Brown Award by the California Council for Environmental and Economic Balance.]

The Accord embodies principles for maintaining proper aquatic conditions in the Bay-Delta Estuary, modifications to the operation of state and federal water projects, implementation of the Endangered Species Act, and coordination of state and federal decision-making. It will be in force for three years, during which time the implementation of the agreements will be pursued. After three years, the agreements contained in the Accord will need to be evaluated. The Accord is the key to development of a long term comprehensive Bay-Delta solution. The Bay-Delta is the source from which two-thirds of the state's population and millions of acres of agricultural land receive all or part of their water supplies. Hence a Bay-Delta solution is essential to long term reliability of California's water supply.

The long term supply of water represents a major challenge for the California economy. The prospects and reality of water shortages will have a major direct effect on the state's economy, impacting such important economic sectors as manufacturing, high tech, tourism, construction, and agriculture. In addition, the effects on these economic sectors "trickles down" (pun intended) to other economic sectors because the activities of these sectors also generate economic activity for related industries and for many other businesses which provide services to these sectors. The implications of continued water shortages into the next century for business reallocations, reduced production and reduced business revenues, job and income losses, and reduced governmental revenues are enormous. Ultimately the state's quality of life is at stake.

Protecting the economic future of California requires the development of a long term comprehensive plan for the Bay-Delta to fill the policy void that will exist when the December 1994 Accord expires. The next several months present a once in a generation window of opportunity (and challenge) for finally resolving one of the longest running and most antagonistic conflicts facing the state. The rewards of success will be economic growth and environmental enhancement. And the price of failure is too horrible to contemplate. The business community, agricultural industries, environmental interests, urban water interests, and governmental leaders which supported the Bay-Delta Accord must focus on the challenges that lie ahead in the next few months to assure that the collaborative and creative spirit that produced the Accord also produces the critical implementation measures needed for a long term comprehensive plan. Business and labor leaders played a critical role in getting the collaboration process working. This was only the beginning. There is a continued and vital role for the business community in assuring that the steps necessary to implement the Accord are carried out.

INTRODUCTION

California must carefully manage its water resources to ensure a reliable supply from year to year, due to its demographic and hydrologic conditions. Maintaining this water supply is critical to supporting the state's $750 billion dollar economy. At the same time, environmental uses require a substantial portion of annual freshwater runoff.

The Bay-Delta

The heart of both California's aquatic environment and its water supply system is the San Francisco Bay-Sacramento/San Joaquin Delta (Bay-Delta). The Bay-Delta provides water for two-thirds of the state's population and millions of acres of agricultural land. It also is home to the most expansive wetland habitat on the West Coast, with a multitude of fish and bird species depending on its resources. The state's two largest water delivery systems, the federal Central Valley Project (CVP) and the State Water Project (SWP), export water from the Southern Delta for irrigation and urban use to the South.

This large-scale export, combined with other factors such as pollution, over-fishing, wetland loss, and unscreened diversions, contributed to major declines in recent years. Federal resource agencies in the early 1990's listed the winter-run Chinook salmon as endangered and the Delta smelt as threatened under the Endangered Species Act (ESA). Restrictions imposed on water exports through enforcement of the ESA substantially reduced supply reliability for urban and agricultural users.

Attempts at Resolution

Unfortunately, legal and political gridlock prevented adequate resolution of long-standing Bay-Delta problems for more than a decade. After the State Water Resources Control Board failed to adopt protection measures contained in its draft Decision 1630 in the spring of 1993, the U.S. Environmental Protection Agency (USEPA) issued its own draft standards in December 1993, claiming authority under the federal Clean Water Act.

In response to USEPA's proposed standards, a consortium of urban and agricultural water agencies proposed an alternative protection plan that they claimed utilized a sounder scientific approach. These water agencies initiated detailed discussions with state and federal resource agencies and environmental organizations over the merits of the two proposals, with the goal of finding a mutually agreeable protection plan.

Business Community and North-South Alliance

California's business community focused increased attention on the Bay-Delta when the March 1994 issue of Standard & Poor's Creditweek Municipal magazine warned bond investors that political gridlock surrounding unresolved environmental issues in the Bay-Delta threatened to downgrade the credit ratings of public utilities throughout the state.

This warning prompted a highly influential group of business leaders from both Northern and Southern California, in writing, to urge President Clinton and Governor Wilson to take bold action to resolve the issue.

The business community's active role in the debate influenced a fundamental shift in California water politics: the past dichotomy of northern and southern water interests had been transcended by the state's economic future. The coming together of business leaders and water agencies from the north and south is an implicit acknowledgment that policy-making over water issues in California must occur on a "one state" basis.

This unprecedented coming together of business leaders from north and south around the need for a statewide resolution of water policy signaled the recognition by these business leaders that the California economy is placed in serious jeopardy by continued stalemate that prevents long term reliability of the water supply. As the drought demonstrated, all economic sectors are threatened by the failure of the state's water management system. No longer can we afford for agriculture, industry, commercial, and residential users to fight among themselves over an increasingly unreliable water supply. No longer can we continue to pit economic uses of water against environmental uses. Moreover, the Standard & Poor warning dramatized the potential cost to publicly financed water facilities of continuing gridlock. The continued state and local fiscal crises emphasizes the importance of a strong economic recovery to the financing of critical public services such as education, public safety, and infrastructure. Yet, a sustainable economic recovery is dependent upon a reliable and affordable water supply.

WATER SUPPLY AND THE CALIFORNIA ECONOMY

California's Water Dependent Businesses

The state has been experiencing the largest population surge in its history. During the 1980's the state grew at a 25 percent growth rate, to 30 million people in 1990. Since then the state has continued to grow, to over 32.3 million in 1995 according to the Department of Finance. This growth is expected to continue for the foreseeable future.

According to the Center for Continuing Study of the California Economy (CCSCE), California will grow to a population of 38.5 million by 2005. Other projections place the state's 2020 population as high as 49 million.

This population growth is supported by growth in jobs and incomes. According to CCSCE, California could have 17.4 million jobs and over one trillion dollars in income by 2005. Figure one displays the state's major growth trends. Most of the major industry groups, except agriculture and mining, will see significant job growth over the next ten years.

Figure two shows the job trends between 1990 and 2005 for the major industry groups.

Figure 1

California Major Growth Trends

	1993	2005	CA % Change	U.S. % Change
Total Jobs (Thousands)	13680.9	17401.3	27%	18%
Income (Billions of 1993$)	681.1	1006.6	48%	34%
Households (Thousands)	10834.2	13222.2	23%	12%
Population (Thousands)	31742	38500	21%	12%

Source: CCSE

Figure 2

California Jobs by Major Industry Group

(Thousands)

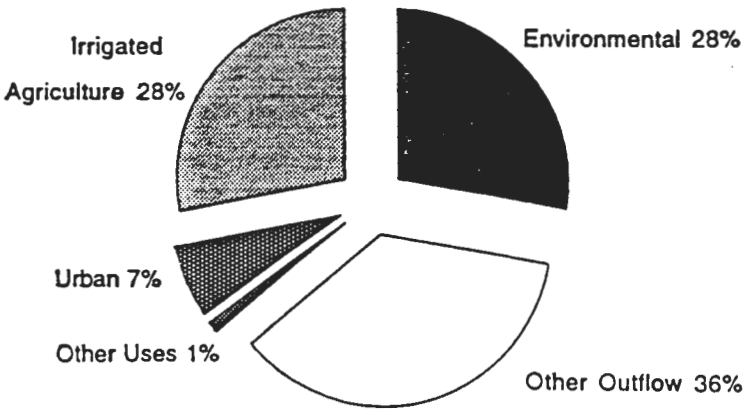
	1990	1993	2005	Change 1990-93	Change 1993-2005
Agriculture	363.6	361.2	334	-2.4	-27.2
Mining	37.7	34.3	30.7	-3.4	-3.6
Construction	561.8	445.5	612.5	-116.3	167
Manufacturing	2068.8	1803.9	1883.1	-264.9	79.2
Trans., Pub. Utility	612.2	601.8	712.5	-10.4	110.7
Trade	2992.7	2786.8	3603.5	-205.9	816.7
Fin. Ins., & Real Estate	808.8	786.4	980	-22.4	193.6
Services	3343.1	3462.8	5212.6	119.7	1749.8
Government	2074.8	2078.2	2519.9	3.4	441.7
Self Employed	1329.2	1320	1512.5	-9.2	192.5
TOTAL JOBS	**14192.7**	**13680.9**	**17401.3**	**-511.8**	**3720.4**

Source: EDD, CCSCE

This growth in jobs and income is not guaranteed. It depends upon a number of factors including the availability of a reliable water supply to support the growth. According to the Department of Water Resources, without new facilities and improved management the state will experience water shortages in dry years of between 2.2 million and 4.2 million acre feet by 2020. (An acre foot is about 326,000 gallons. It provides for the annual water needs of two average families.) While agriculture is the largest user of water, urban users would also experience significant difficulties as a result of shortages. Figure three shows the applied water use statewide and figure four shows the urban applied water use by sector. Ideally water supply shortages would be distributed to minimize economic losses. However, legal and institutional constraints may prevent the necessary scale of redistribution of water between competing uses which could help reduce economic effects. The Bay-Delta Accord is the first step in beginning to address these constraints.

Figure 3

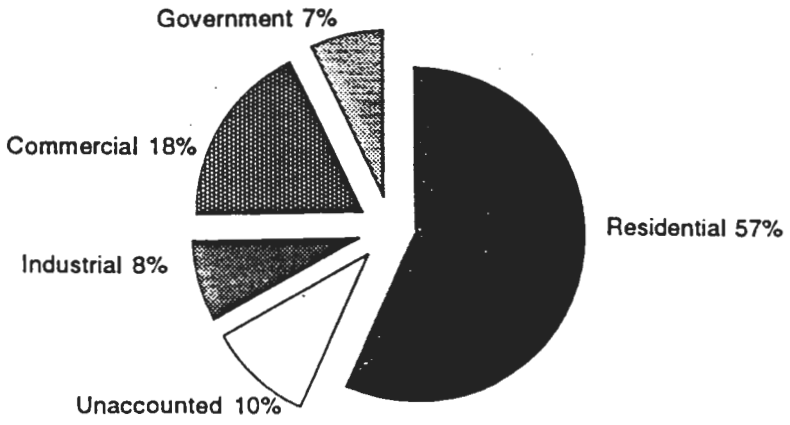
Disposition of Average Annual Water Supply



Source: Department of Water Resources

Figure 4

Urban Applied Water Use by Source



Source: Department of Water Resources

As figure three demonstrates, agriculture is the largest user of the state's water resources. Agriculture was also the most obviously impacted from the recent drought. A study by Northwest Economic Associates estimates that the 1991 drought in the San Joaquin Valley took 25,000 acres of farm land out of production. It contributed to a drop in farm revenues of $281 million and raised farm water costs by $163 million. It also caused the loss of 5,000 farm jobs and over 4,000 jobs in related industries.

While there has been no comprehensive statewide study of the effects of water shortages on such urban users as manufacturing, commercial, and residential, there have been a number of studies focused on specific industries and regions. What these studies show is that water shortages cause substantial losses or potential losses in revenues and jobs in manufacturing and commercial sectors. These in turn translate into losses in income, reduced capital investment, and to losses in state and local tax revenues. Water shortages also increase costs for local governments, thereby cutting into revenues available for other high priority services required by business and residents. Most ominously, the prospect of continued water shortages leads business leaders to consider relocation from the state and to reconsider expansion plans in the state. These decisions, if left unaddressed, bode ill for projections of job and income growth over the next decade.

A study by Spectrum Economics, Inc. found that the impact of water shortages is particularly profound on the state's important high technology industry and basic manufacturing. Although manufacturing uses less than 2 percent of the state's water supply and only 8 percent of the urban water supply, water is a critical input to production for many manufacturers. An acre foot of water supports an average of $1.8 million of plant shipments in the high technology/defense industry groups and $400,000 for all the industry groups surveyed by Spectrum. According to the U.S. Department of Commerce, in 1991 California high tech had an economic output of almost $55 billion. In 1993 high tech and defense together provided for over 500,000 jobs. Diversified manufacturing provided for 857,000 jobs.

Manufacturers have taken extensive steps to achieve water conservation, making significant new conservation more difficult and expensive in the future. Hence, if water supplies continue to be limited, industries critical to California's economic future will face production constraints. The Spectrum study found that industrial water shortfalls of between 50,000 and 100,000 annual acre feet could translate into billions of dollars of economic losses to the state's industries. And according to Spectrum, their study revealed "...an erosion in business confidence that reliable water supplies will be available to support plant growth. Plant managers are reconsidering their expansion plans. The evidence shows that industry managers are looking elsewhere for plant expansion."

Other Economic Impacts

The state's robust population growth requires the construction of housing to provide the homes and neighborhoods for the population. As figure two shows, construction is one of the important sources of jobs. Residential users account for 57 percent of urban applied water use. Water shortages impose lifestyle and psychological costs on residential water users in urban areas. They also result in the loss of construction jobs and housing units as local governments and court decisions curb residential growth by tying development approvals to water supply availability. While there are some 33 proposals for new towns up and down the state, none of these have as yet secured a water supply for the tens of thousand new homes. The competition between farm interests and construction interests for water supplies creates an unnecessary and harmful zero sum game for two of the state's important economic sectors.

Other studies have documented the importance of water supply to commercial businesses. The heaviest commercial user categories are those associated with tourism such as restaurants, hotels, and recreational facilities and those associated with health care. These account for many of the jobs identified as services in figure two, the largest source of job growth in this decade. According to the California Division of Tourism, in 1992 travel in California generated $52.8 billion in spending and supported 668,000 jobs. While there are no studies which adequately quantify the potential job loss due to water shortages, it is clear that long term shortages of water will have a negative effect on these all important economic sectors.

There are also secondary effects on the economy as production cutbacks and job losses in the above economic sectors negatively impact other industries and services. For example, foreign trade is an important part of the state's economic base. In 1993 California firms produced $70.3 billion in goods for export. Computers, electronics, aircraft, and crops and food products are the largest exports, together representing $49 billion in exports. These are all sensitive to water shortages. Construction provides another example. While construction directly provided over 445,000 jobs in 1993, construction also relies on many other services which likewise provide substantial jobs. Financial, insurance, and real estate services, for example, accounted for over 786,000 jobs in 1993.

Finally, long term water supply shortages will also effect the state's governmental entities. Standard & Poor pointed out the credit implications: "Problems faced by California water suppliers will have a generally negative impact on credit quality for years to come due to the economic impact and rising cost associated with water supply and reliability." They went on to say that "Higher rates, larger and more expensive capital programs, and financial budget constraints will undoubtedly pressure the credit quality of urban and agricultural municipalities S&P rates." Reduced credit quality translates to higher costs to taxpayers and water users for governmental credit. Moreover, the significantly reduced economic activity threatened by a lack of reliable water supplies translates into reduced tax revenues for state and local governments. As jobs and income are lost, the tax structure is able to produce fewer tax dollars. This has three important economic impacts. First, government is less capable of financing priority public services which are important to future economic growth, such as education, public safety, and infrastructure. Second, the inability of the existing tax structure to raise adequate revenues produces pressure to increase taxes, thereby reducing the state's economic competitiveness. Finally, government is an important source of jobs, as figure two illustrates. In 1993 government provided for over 2 million jobs in California.

The Synergism of a Reliable Water Supply

The California economy is a complex network of industries and businesses connected and dependent on each other and interdependent with government. A reliable water supply enhances the prospects for the most water dependent economic sectors. This in turn benefits other businesses and services. Likewise the total benefits of a reliable water supply produces more revenues for government which is then able to finance public services which further improve the competitiveness of the California economy without the need for substantial and detrimental tax increases. On the other hand, the lack of a reliable water supply has just the opposite effect: Directly impacting the productivity of the most water sensitive economic sectors and thereby indirectly impacting both other businesses and government. Truly water is more than an important natural resource. It is the life blood of the California economy.

BAY-DELTA PROTECTION PLAN

As a first step in resolving the need for immediate Bay-Delta standards and for greater state/federal cooperation, state and federal resource agencies signed a "Framework Agreement" in June 1994. This Agreement set a goal for developing immediate protections in December 1994 and established a state/federal process (known as CALFED) for developing more comprehensive, long-term solutions. The agreement represented a new cooperative relationship between the state and federal agencies and also brought an end to the 15-year impasse on Bay-Delta protections.

In the days before December 15, 1994, representatives from the three major "Stakeholder" groups (urban, agricultural, environmental) held intensive eleventh-hour negotiations with state and federal officials over a consensus package of environmental protections. Once agreement was reached, Governor Pete Wilson and Secretary of the Interior Bruce Babbitt convened a press conference to announce the historic Accord, along with EPA Administrator Carol Browner, other state and federal officials, and representatives of the various Stakeholder groups. Declaring "a major victory of consensus over confrontation," the state and federal leaders, along with Stakeholder representatives, described the terms of the Accord.

The Accord sets forth new regulatory standards to replace the rules that previously controlled water quality in the Bay-Delta. The measures will (1) establish new outflow and operation standards to improve aquatic habitat conditions; (2) modify ESA implementation to increase certainty and operational flexibility for water users; and (3) assure implementation of programs to improve non-outflow-related factors (such as unscreened water diversions and pollution) that have contributed to environmental declines.

Outflow Standards

The interim regulations focusing on flow and operational constraints cover freshwater outflow from the Delta and the Sacramento and San Joaquin Rivers. These regulations also include export limits for major pumping stations in the southern Delta and guidelines for closure of the Delta Cross-Channel, which prevents diversion of young salmon from the Sacramento River into the interior Delta.

ESA Implementation

The Accord makes major changes in ESA implementation that increase the certainty of water supplies to federal and state water contractors. Improved monitoring for impacted species, accelerated interpretation of the information gathered and immediate response in project operations are measures to be implemented for developing ecosystem management in the Bay-Delta.

Non-Outflow Factors ("Category III")

The Accord recognizes that several factors other than outflow affect the health of the Bay-Delta. These factors include:

1. Unscreened water diversions (highest priority);
2. Pollution from industrial and agricultural discharges;
3. Commercial over-harvest and illegal sport fishing;
4. Degradation of levees and channels;
5. Degradation of wetlands and other critical terrestrial habitat; and,
6. Proliferation of non-native species.

In the Accord, the signatory water agencies commit to financially supporting programs to address non-outflow factors in the context of a comprehensive multi-species planning

effort. Water users have provided $10 million in "seed money" to allow for early implementation of Category III measures. The more comprehensive Category III program will require up to $60 million per year, necessitating additional funding from state and federal sources. It also will be necessary to determine the responsibility of other water users toward meeting this annual amount.

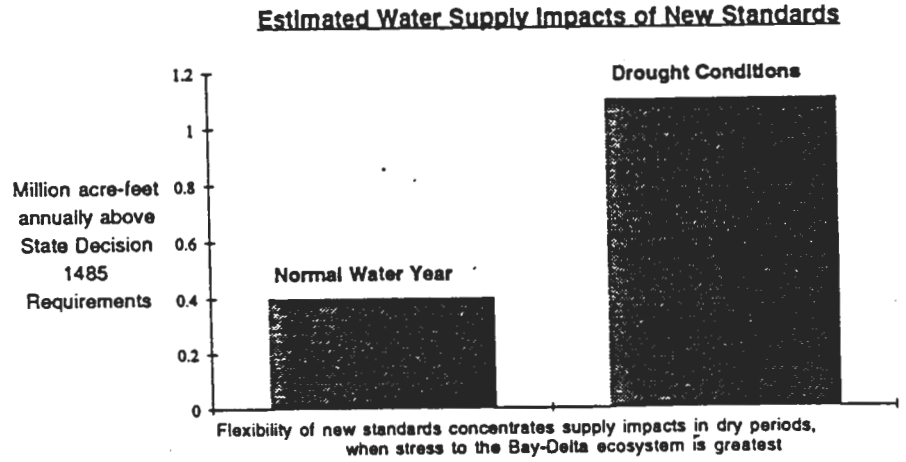
Re-Assertion of State Commitment to Environmental Protection

The December Accord was a reaffirmation of the state's commitment to environmental protection, while providing adequate water supply reliability for the state's economy. The Accord also returned primary authority for the Bay-Delta to California. Further, it put California water policy back on the track of Governor Wilson's 1992 Water Policy Statement, which committed the state to environmentally and economically sound policies in the Bay-Delta.

Water Costs of Agreement

In a normal water year, there will be approximately 400,000 acre-feet less freshwater available for export from the Delta under the new agreement. In a critically dry year, the water supply impacts would total approximately one million acre-feet. An important feature of the new standards is that they permit higher exports in normal and wet periods when the ecosystem is under less stress, freeing up water supplies for downstream storage and transfer. Figure five shows the estimated water supply impacts of the new standards.

Figure 5



Why the Agreement Benefits Water Users

Even though water users will lose supplies in certain year-types, overall supply reliability increases under the new plan. Water suppliers can more accurately predict the availability of Bay-Delta supplies thus improving planning efforts. Additionally, more water will be available for export in wet years, when stress to the ecosystem is less.

The Agreement also initiated a process for long-range Bay-Delta management, which holds the promise of continued improvements in environmental protection and water supply reliability.

LONG-TERM COMPREHENSIVE SOLUTION

The Bay-Delta agreement represents the beginning, not the end, to developing comprehensive, sustainable solutions for the Bay-Delta. While the agreement is intended to stabilize the ecosystem, it will not by itself produce major recoveries in fish populations or

completely resolve reliability concerns of agricultural and urban water users. However, the Accord does provide a unique opportunity to resolve long-standing environmental concerns in a manner that minimizes economic impacts. This process is now the responsibility of CALFED.

Comprehensive ecosystem management is a new and evolving area of science, and developing a multi-species plan for the Delta provides an opportunity to advance this innovative field. Consensus is emerging from throughout the water and environmental communities that multi-species planning and ecosystem management must take place in the Delta to avoid the problems created by the ad hoc, species-by-species approach taken in the recent past.

CALFED and Stakeholder Input

While CALFED engages in formal planning procedures, the major Stakeholders will pursue an ad-hoc process for reaching consensus among themselves on long-term management issues. The Stakeholders will then provide their findings to CALFED through the public input process.

CALFED's planning process will identify and analyze a broad range of options formulated to protect and enhance the Bay-Delta Estuary by addressing concerns related to biological, water quality, and water supply resources. The options will be grouped into combinations of alternatives which will address the full range of problems in the Estuary. Figure six shows the relationship of CALFED to other programs.

An evaluation and comparison of the alternatives based on expert opinion, scientific modeling and data-gathering will be performed. A preferred alternative will then be selected based on economic feasibility, technical merit, and ability to overcome regulatory and institutional constraints to its implementation .

Funding will be required to implement the preferred alternative for the long-term solutions either through existing sources or new funding mechanisms. Funds must be dedicated and adequate for both initial implementation and long-term operation, maintenance, and monitoring.

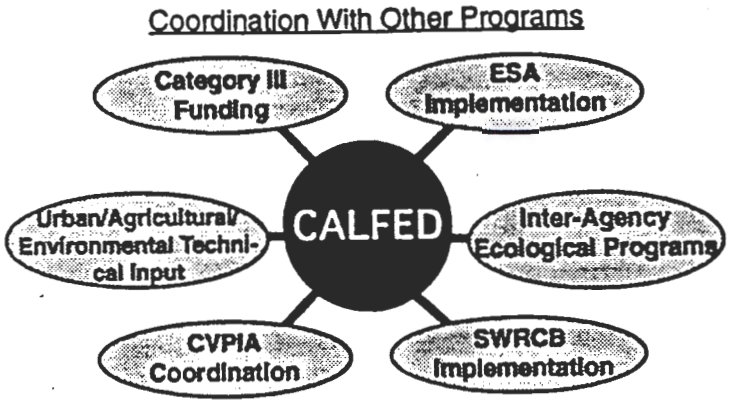
In the long-term, this effort will provide:

- Ecosystem Restoration
- Increased Water Supply Reliability
- Adequate Drinking Water Quality
- Minimized Impacts of Natural Disasters

The program that will fulfill these purposes is expected to include:

- Increased Conservation
- Expanded Water Recycling
- Increased Conjunctive Use
- Increased Water Transfers
- Improved Delta Transfers Facilities
- Increased Off-Stream Storage
- Expansion and Improvement of Wetland, Riparian and Aquatic Habitat
- Appropriate Legal Protections and Institutional Changes for Project Implementation
- Financing Mechanisms

Figure 6



Beyond the Bay-Delta Accord

While follow through on the Bay-Delta Accord is essential to meeting California's long term water supply needs, it is not sufficient. The state's leaders must develop and implement a number of policies and investments to assure that our water management system will sustain the economy, enhance the environment, and maintain a high quality of life for the state's residents. Following are five key principles which Project CPR believes will be useful in guiding this effort.

1. *Collaboration not Conflict.* The Bay-Delta Accord has demonstrated the productiveness of the collaborative process in yielding results which promise to overcome decades of rancorous conflict. While it is often difficult to give up long held biases and pursue compromises, history teaches us that for the most part conflict results only in stalemate. The collaborative approach can be useful not only at the state level, but also regionally and locally. For example, the collaborations being pursued by business, government, environmental, and urban and agricultural water user interests in the Sacramento Area Water Plan Forum offers hopeful promise of a resolution of difficult and complex water issues facing the Sacramento region.

2. *The Environment and the Economy.* The Bay-Delta Accord has also demonstrated the interdependence of the environment and the economy as it relates to water policy. The state's water policy must seek an integrative approach which assures that the water supply will support both a healthy environment and a healthy economy. Such an approach should provide the certainty of a reliable water supply to serve future needs of the economy while assuring water quality and prudent management of ground water.

3. *New Water Facilities and Fiscal and Environmental Prudence.* New water facilities such as improved Delta transfer facilities and off stream storage reservoirs are going to be required. These should be developed on the basis that the total cost of municipal, industrial, and agricultural supply is fully reflected in the price of water delivered and these costs are distributed equitably. The traditional methods of financing large scale infrastructure such as water facilities will no longer be sufficient. We need to develop new methods of financing. Since environmental protections benefit the entire society, it is appropriate for the entire society, not just water consumers, to share the costs of water used for environmental benefits.

4. *Free-Market Approaches and Fairness.* Central to more efficient management of the water supply is more reliance on the marketplace. Obstacles to voluntary transfer of water rights should be eliminated where possible, but existing water contracts should be respected. In addition, incentives for adoption of more creative approaches to water conservation and recycling in agriculture, residential, commercial, and industrial uses should be encouraged. The burdens of conservation should be shared equitably and the impacts of water markets on costs to third parties should be taken into consideration.

5. *Comprehensive Planning not ad-hoc Reaction.* Water supply needs should be incorporated into regional and local long term planning just like other capital facilities needs. This should be done on a comprehensive basis not on a project-by-project basis. Water should not be used as a mechanism to control growth. If properly developed and managed, California's water resources will be sufficient to accommodate growth and serve the needs of urban, agricultural, and environmental uses. Similarly, new growth should not be discouraged by exacting more than a 'fair share' of the costs of facilities and environmental enhancements. Likewise, environmental issues related to water supply and quality should be approached on a comprehensive basis. One of the important innovations incorporated into the Bay-Delta Accord is its comprehensive approach to species preservation rather than relying on a species by species approach.

WHAT CAN BUSINESS, LABOR, AND THE PUBLIC DO TO HELP?

The solution to the problems surrounding the Bay-Delta role in the state's water supply lies in creating a balance among agricultural, environmental, and urban water needs. The Accord is the first step in finding that balance. What must follow in the next three years are specific measures to bring about this complex trade-off. The process by which these measures will be developed is being carried out by the participants to CALFED. But all of us who will be directly effected by the success or failure of this process have the right and responsibility to help assure its success.

This responsibility starts with keeping track of the progress of the effort. We can keep informed by contacting the chairperson of the local water board and expressing interest and concern. We can also assign someone to follow this issue for our organizations.

Second, we can recognize the role of water in planning for the competitiveness of our businesses.

Third, we can communicate our concerns to our government representatives and to other business and labor leaders.

Fourth, we can encourage the Governor and Legislature to provide the necessary state funds to help implement the Bay-Delta Accord.

Finally, we can work through our various organizations and our elected representatives to keep pressure on the CALFED/stakeholder processes and to support continued collaboration on the difficult policy decisions which will be necessary to carry through this historic change in California water policy.

If you would like more information in the coming months on what you can do to help, please write the Council.

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ENVIRONMENTAL DEFENSE FUND

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June 7, 1995

Hon. Daniel Beard
Bureau of Reclamation
Department of Interior
1849 C St., NW
Washington, DC 20240

Dear Commissioner Beard:

It is our understanding that you were recently briefed in detail on the pending proposal to use the existing portion of the San Luis Drain to route agricultural drainage from the Grassland Basin more directly to the San Joaquin River. This proposal is somewhat improved over prior proposals to which EDF and other environmental organizations have taken exception. As we will explain below, however, it continues to suffer from a number of critically important flaws. Accordingly, we urge you to reject the proposal as it stands, with instructions to your regional office to negotiate an improved Use Agreement along the lines we suggest in this letter and have now advocated for four years in direct negotiations with representatives of the Grassland area drainers.

As you know, this proposal is one among a much larger array of activities currently being considered by the Bureau and others that will affect water use and pollution discharge in the San Luis Unit. Included among these activities is the Federal government's appeal of a recent Federal court decision ordering the United States to pursue a permit for extension of the San Luis Drain to the San Francisco Bay/Delta Estuary; the so-called Central Valley Project Authority's proposal to take over the Central Valley Project; the Bureau's proposal to Congress regarding repayment policy for the costs of Kesterson cleanup and related studies; and proposals made by the Central Valley Project Water Association and their Washington, D.C. lobbyists to amend the Central Valley Project Improvement Act. It is in the context of all these possible actions that we would like to draw your attention to three essential elements that we believe should be contained in any Bureau contract allowing use of the existing San Luis Drain:

(1) The contract must assure that whoever discharges pollution to the San Joaquin River from a Federal facility -- be it a regional district, local water and/or drainage districts, or individual farmers -- must be held accountable for those discharges;

(2) The level of environmental protection guaranteed by the Use Agreement should at least be equivalent to that which would be required if the Federal government operated the project, since the San Luis Drain will remain a Federal facility; and

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(3) The contract should incorporate no new subsidies beyond those already provided in past legislation and recommended in the Bureau's recent repayment study.

In a nutshell, these objectives speak to the Federal government's interest in avoiding any expansion of its financial commitments and exposure to liability as a result of allowing non-Federal entities to control and operate a Federal facility. In our view, they also represent sound public policy.

As we noted above, EDF and other environmental organizations have been actively negotiating with the districts who wish to use the San Luis Drain for a number of years. Our consistent interest during that time has been to accomplish the three objectives we have just summarized. To this end, we reached conceptual agreement with representatives of Grassland area districts in early 1994 that any proposal to use the Drain would include clear accountability, specific commitments to meeting specific drainage (load) discharge limits in order ultimately to comply with water quality standards, and a description of a long-term drainage management plan sufficient to justify the characterization of the current agreement as an "interim" arrangement and to make clear who would be paying for the long-term system.

Despite this longstanding agreement in principle, the proposal you are currently reviewing does not meet these tests, and as a result does not accomplish the objectives outlined above. Nonetheless, we believe that the proposal is stronger than the draft agreement presented to you in the fall of 1993, and can be amended both to accomplish the objectives listed above and be consistent with the negotiated principles of agreement.

In brief, the improved portion of the current proposal relates to accountability. The San Luis and Delta Mendota Water Authority (Authority) proposes to take responsibility for managing both the Drain and drainage discharges, and to sign sub-agreements with each of the discharging entities that provide some measure of authority over discharges. While we are concerned that significant legal loopholes remain in the package currently proposed -- for example, the Authority does not seem to have the power to mandate any actions by its member districts -- we applaud the leadership shown by the Authority in developing this focal point for regional cooperation and accountability.

The current proposal, however, lacks specific commitments to reducing discharge loads and meeting applicable water quality standards, not only for the San Joaquin River, but for the sloughs and smaller waterways whose water quality it is the intention of the proposal to improve. Instead, the proposal envisions meeting whatever requirements are eventually adopted by the Central Valley Regional Water Quality Control Board (Regional Board) with respect to water quality standards. Because the Regional Board has declined for years to adopt water quality standards approvable by EPA and has allowed even its own inadequate standards to be violated for four years without taking action, relying on yet-unspecified Regional Board actions that may take place at some

point in the future is unacceptable Federal policy. It does not accomplish the objective of guaranteeing that the Federal government's responsibilities with respect to environmental protection are met. To help assure at least a minimum level of environmental accountability for the operation of a Federal facility, in the spirit of the "Club Fed" process which proved so successful in the Bay/Delta standard-setting context, we recommend that EPA be consulted as to what its recommendations for the use of this facility would be were the United States again to propose to operate the facility itself. Those should then become the requirements which the Authority must agree to meet.

Finally, the long-term plan makes no specific commitments to achieve environmental objectives and appears to depend upon continued Federal spending for development of increasingly sophisticated "real-time" monitoring capability. The fact is that several, although by no means all, of the local districts who are part of the Authority's proposal have made substantial progress in pursuing various water conservation and source control measures, which are necessary elements of any successful long-term plan. But these achievements, at this point in time, are by no means adequate to assure water quality in the San Joaquin River.

In short, what we therefore ask is that the Bureau obtain specific commitments that will protect the San Joaquin River in exchange for granting the Authority the right to use a Federal facility. While the Authority's proposal contains some of the elements necessary to achieve the protection of the water bodies its actions impact, it is incomplete and unenforceable. The United States should ask for more before it effectively gives the Authority a blank check to pollute the San Joaquin River at will.

Thank you for considering our views. Please feel free to call us if you have any questions regarding our position.

Sincerely yours,

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TFY/TG:pgf

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ECONOMIC ANALYSIS OF THE SAN-FRANCISCO BAY-DELTA COORDINATION MEETING

JUNE 9, 1995

North Bay Regional Water Treatment Plant, Fairfield, CA.

Meeting Notes

(Compiled by: Chris Dumas, EPA, 415-744-2017)

CALFED and the CALFED Bay-Delta Program

1) Judy Kelly (CALFED, EPA) gave a review of CALFED.
2) Some materials describing the CALFED BAY-DELTA PROGRAM and time line are enclosed.

Review and Assessment of the Role of Economic Analysis in Bay-Delta Planning

1) Michael Hanemann (UCB, Agri. & Resource Econ.) gave a brief review of the history of economic analysis in Bay-Delta Planning. Hanemann noted that Bay-Delta planning has consisted of two separate components: (a) developing water quality and biological standards, (b) determining water rights to achieve the standards. The two-component planning method has not worked, basically because the two components interact strongly in hydrological, biological, legal and political dimensions.

2) The first *feasible* plan has often been selected as the *single* alternative for which economic impacts are then estimated. The single alternative is then massaged into an acceptable form. The focus on the first feasible alternative as the *only* alternative has stifled innovation. In addition, if the single alternative is challenged in court, then there are no other alternatives to present as evidence that the chosen alternative is the best.

3) The objectives of the various interest groups have not always been well-defined. This has led to unnecessary confusion, wasted effort and costly litigation.

4) The process of *developing* policy alternatives has not benefited from the inclusion of an economics perspective. Rather, economics has often been relegated to the role of analyzing *given* alternatives "after-the-fact." This practice ignores the useful roles of economics in clarifying and defining policy objectives, defining policy variables (such as "water quality," "water quantity," and "reliability"), identifying information needed to reduce uncertainty and developing efficient means of obtaining such information, and screening potential alternatives to a small set that highlights the possible range of policy outcomes.

5) Economics and physical models have been used to answer the question: "Given a regulatory standard, what happens?" This is "after-the-fact" policy *simulation*. While this type of analysis is certainly useful, the ability of these models to explore the question: "What is the best set of standards to investigate in depth?" should also be exploited. This is pro-active policy *optimization*, which explicitly recognizes the costs and benefits of exploring various policy alternatives.

6) Previous analyses have divided California into three regions (upstream, delta, and export). This level of disaggregation has been insufficient to answer many important policy questions.

7) Many physical models have economic and/or policy variables that are relatively "static," or constant. This is unrealistic. Physical models need to interact with economic models to reflect the feedback effects existing between hydrology, water project operations, and environmental variables and the economic *behavior* of water districts, urban water users and recreationists, for example.

8) Similarly, economic models take aspects of the environment and agricultural and urban water resource infrastructures as static. This, too, is unrealistic. Both the environment and water resource infrastructure can be modified or augmented in response to economic incentives or imperatives. Economic models need to be flexible enough to consider various specifications of environmental factors and infrastructure arrangements.

Brainstorming, Discussion and (very) Preliminary Suggestions for CALFED

1) There are several arguments for establishing a *two-track process* for including economics analysis into CALFED's Bay-Delta Program. The first track would focus on analyzing short-run issues driven by policy deadlines. Short-run analyses would need to consider immediate fiscal (e.g., farm loan eligibility and repayment), physical (e.g., can a particular conveyance facility handle a particular water transfer) and biological (e.g., preventing imminent extinctions) impacts as well as cost/benefit criteria. The second track would develop policy (and the appropriate supporting research and data) that would focus on the longer-run, sustained management of the Bay-Delta. This second track would emphasize balancing benefits and costs in the longer-run, including policies to promote economic efficiency, economic equity, and non-market policy objectives (e.g.: "ecosystem health"). The distinction drawn here is between short-run policy issues and long-run policy issues, not between short-term research programs and long-term research programs. In general, both short and long-term research programs may be necessary to address both short and long-run policy issues.

2) The two, historical components of Bay-Delta planning policy, water quality standards and water rights, need to be considered *simultaneously*.

3) Rather than a single policy alternative, it would be better to identify a "discrete set" of alternatives, i.e., a small number of distinct, contrasting alternatives to highlight the range of

outcomes possible along several important dimensions (agricultural, urban, and environmental). Each policy alternative should identify the policy dimensions addressed in the alternative, indicate the level of each policy variable associated with the alternative, address the role and extent of uncertainty associated with each policy variable associated with the alternative, identify means and costs of reducing policy-relevant uncertainties, contrast the outcomes associated with each policy alternative and implications for various stakeholder groups. Various policy alternatives might be used to display the range of possible policy outcomes by assigning different "weights" to the policy objectives of each stakeholder group and then maximizing the benefits to all stakeholder groups subject to the weights.

4) For each policy alternative, consider a range of economic management methods that could be used to implement the alternative (E.g.'s: market transfer schemes, tiered pricing schemes, conservation schemes, reclamation schemes, capacity additions, infrastructure improvements, etc.)

5) Knowledge of the structure, input needs, and outputs of physical models (biological, hydrological, operations, etc.) is integral to successful economic analysis. These models provide part of the framework within which economic analysis occurs. Integration of physical and economic models needs to occur early in the policy development process and needs to be an ongoing effort. Policy-makers need to be aware of the differing constraints faced by modelers in different scientific disciplines (in terms of available data, inherent complexity of the system, etc.) and the possibilities and costs of relaxing modeling constraints in each discipline. Better channels of communication need to be established between physical modelers and economic modelers.

6) CALFED needs to establish a system of allocating and authorizing appropriate short-term and long-term economics research effort that a) recognizes and effectively makes use of the relative strengths of various researchers, research teams, and research institutions, b) avoids the costs and confusion associated with duplication of specific research efforts, and c) ensures consideration of all stakeholder perspectives.

7) Maintain an open, inclusive policy-development process to avoid costly and time-consuming litigation. Include stakeholders early in policy process. Try to achieve ongoing dialogue between physical modelers, economic modelers and stakeholders. Try to identify the general objectives of each stakeholder group and try to identify the relationships between these general objectives and specific policy variables (water flows, number of fish, reservoir levels) addressed by existing, and potential future, physical and economic models.

8) Identify a non-partisan "champion" of economic analysis to promote the role of economic analysis in Bay-Delta planning.

9) Specific research issues identified (not necessarily by consensus):

a) Define the role of Adaptive Management in the CALFED process and identify concrete ways to implement Adaptive Management.
b) Investigate the dimensions, extent, and policy implications of uncertainty, risk and reliability of water supplies and delivery, esp. to "end users." What are the tradeoffs between quantity and reliability?
c) Investigate the dimensions and policy implications of heterogeneity (agricultural, urban and environmental) and the level of aggregation in economic analysis.
d) Identify methods of measuring and contrasting the equity of policy alternatives.
e) Identify sovereignty over policy variables; i.e., who has the power to pull the various policy levers and how should their incentives/behavior be modeled?
f) Investigate how water rights would be administered, how might the chosen process constrain policy.
g) Emphasize the need for simplicity in the policy-development process, identify and explain justifications for increased complexity in the policy-development process.
h) Identify the importance of existing physical infrastructure in constraining policy alternatives.
i) Identify impediments to water market implementation and potential solutions.
j) Identify, explain and recommend methods (and associated informational needs) of determining regional, local and industry-specific economic impacts.
k) Identify, explain and recommend methods (and associated informational needs) of determining economic "winners and losers."
l) Investigate the potential effects of the *security* of water rights on various policy alternatives and implementation schemes.
m) Investigate the potential for conjunctive use of ground and surface water to add to future water supply storage.
n) Identify and quantify sources of market failure (such as unusually large transactions costs, "third-party impacts", non-competitive markets, coordination failures, situations involving asymmetric information) in proposed alternatives and implementation methods and investigate ways of overcoming these market failures.
o) Investigate long-term effects of June 1994 Framework Agreement and December 15 Principles of Agreement in the event they become the basis for longer-term Bay-Delta policy.

CALFED / Bay-Delta Economics Meeting
Fairfield, CA
June 9, 1995

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Hoagland, Ray	CDWR	916-653-6785	ray@water.ca.gov
Illingworth, Wendy	Foster Associates	415-391-3558	
Ingram, Wes	SWRCB	916-658-3972	
Jenkins, Mimi	U.C. Davis	916-752-6688	
Kelly, Judy	CALFED	916-657-2666	
Lund, Jay	U.C. Davis	916-752-5671	jrlund@ucdavis.edu
Mann, Roger	CH2MHill - PEIS team	916-920-0300	Phone Extension: X201
Parker, Doug	U.C. Berkeley	510-642-8229	
Paul, Duane	Northwest Economics	916-556-1755	
Robins, Todd	NRDC	415-777-0220	
Rodgers, Kirk	USBR	916-979-2280	
Stroh, Craig	USBR	916-979-2342	
Wegge, Thomas	Jones & Stokes	916-737-3000	
Yale, Carolyn	EPA-Region 9	415-744-1580	
Yolles, Peter	EDF	510-658-8008	

CALFED BAY-DELTA PROGRAM

May 25, 1995

The San Francisco Bay/Sacramento-San Joaquin Delta Estuary is a critically important part of California's natural environment and economy. In recognition of the serious problems facing the region and the complex resource management decisions that must be made, the State of California and the federal government are working together to stabilize, protect, restore, and enhance the Bay-Delta Estuary.

Basis for Cooperation

State-federal cooperation was formalized in June 1994 with the signing of a Framework Agreement by the involved state and federal agencies. The state agencies include the Resources Agency, the Department of Water Resources, the Department of Fish and Game, the California Environmental Protection Agency, and the State Water Resources Control Board. Federal Agencies include the Bureau of Reclamation and the Fish and Wildlife Service, within the Department of the Interior, the Environmental Protection Agency, and the National Marine Fisheries Service, part of the Department of Commerce. These agencies with management and regulatory responsibility in the Bay-Delta Estuary are working together as CALFED, and will provide policy direction and oversight for the process.

The Framework Agreement pledged that state and federal agencies would work together in three areas of Bay-Delta management:

- Water quality standards formulation;
- Coordination of State Water Project and Central Valley Project operations with regulatory requirements; and
- Long term solutions to problems in the Bay-Delta Estuary.

Since June of last year significant progress has been made in all three areas. These management efforts have included close cooperation not only among State and federal agencies, but involvement of urban and agricultural water users, fishing interests, environmental organizations, business, and others. These groups--the stakeholders in resources of the Bay-Delta Estuary--play an important role in the collaborative process of solving problems.

Water Quality Standards

On December 15, 1994 state and federal agencies, working with stakeholders, reached agreement on water quality standards and related provisions that would remain in effect for three years. The agreement was based on a proposal developed by urban, agricultural, and environmental interests. Elements of the agreement include springtime export limits expressed as a percentage of Delta inflow, regulation of the salinity gradient in the Estuary so that a salt concentration of two parts per thousand (X2) is positioned where it may be more beneficial to aquatic life, specified springtime flows on the lower San Joaquin River to benefit Chinook salmon, and intermittent closure of the Delta Cross Channel gates to reduce entrainment of fish into the Delta.

A second category of provisions is intended to reconcile operational flexibility and compliance with the federal Endangered Species Act (ESA). Compliance with provisions of the ESA is intended to result in no reduction in water supply from what would be available for export under other operational requirements of the agreement. This will be accomplished in part by better monitoring for the presence of aquatic organisms of concern, faster interpretation of monitoring information, and immediate response in the operation of export facilities. This is known as real time monitoring.

A third category of provisions is intended to improve conditions in the Bay-Delta Estuary that are not directly related to Delta outflow. Some of these "Category III" measures may include screening of unscreened water diversions, waste discharge control, and habitat restoration. Parties to the agreement committed to implementation and financing of such measures, and estimated that a financial commitment of $60 million would be required in each of the three years of the agreement.

The December 15 agreement is reflected in the State Water Resources Control Board's "Draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary" dated December 1994 and the Final Water Quality Plan, which was adopted May 22, 1995.

Operational Coordination

Operators of the California State Water Project and the federal Central Valley Project recognized that compliance with endangered species protections, water quality standards, and provisions of the Central Valley Project Improvement Act would require project operations to be coordinated even more closely than in the past. To help ensure this coordination, representatives of the two projects and the other CALFED agencies meet regularly to manage day-to-day project operations. The deliberations of this Operations Group or "Ops Group" are conducted in consultation with water user, environmental, and fishery representatives.

Long Term Solutions

The third element of the Framework Agreement called for a joint State-federal process to develop long-term solutions to problems in the Bay-Delta Estuary related to fish and wildlife, water supply reliability, natural disasters, and water quality. The intent is to develop a comprehensive and balanced plan which addresses all of the resource problems. This effort will be carried out under the policy direction of CALFED. The public will have a central role in the development of long term solutions. A group of more than 30 citizen-advisors selected from California's agricultural, environmental, urban, business, fishing, and other interests who have a stake in finding long term solutions for the problems of the Bay-Delta Estuary has been chartered under the Federal Advisory Committee Act as the Bay-Delta Advisory Council. BDAC will advise CALFED on the program mission, problems to be addressed, and objectives for the CALFED Bay-Delta Program. These citizen advisors will also provide a forum to help ensure public participation, and will review reports and other materials prepared by CALFED staff.

The CALFED Bay-Delta Program will be managed by an interdisciplinary, interagency staff team and will be assisted by technical experts from state and federal agencies as well as consultants. The CALFED Bay-Delta Program will carry out a three-phase process to achieve broad agreement on long term solutions. First, a clear definition of the problems to be addressed and a range of solution alternatives will be developed. Second, to comply with the California Environmental Quality Act and the National Environmental Policy Act, a program level or first-tier Environmental Impact Report and Environmental Impact Statement will be prepared to identify impacts associated with the various alternatives. Finally, a project-level or second-tier EIR/EIS will be prepared for each element of the selected alternative.

The first phase of work for the CALFED Bay-Delta Program, developing a range of alternatives, will include extensive efforts to obtain public input through workshops and other means, preparation of a Notice of Intent and Notice of Preparation pursuant to NEPA and CEQA, and public scoping sessions to determine the focus and content of the EIR/EIS. The first phase is scheduled to conclude in early 1996 with the development of a range of alternatives for achieving long term solutions to the problems of the Bay-Delta Estuary.

For additional information, contact:

CALFED Bay-Delta Program
1416 9th Street, Room 1155
Sacramento, CA 95814
Phone (916) 657-2666
Fax (916) 654-9780

Copies of the following documents are available from CALFED:

- Framework Agreement Between the Governor's Water Policy Council of the State of California and the Federal Ecosystem Directorate, June 1994.

- Principles For Agreement on Bay-Delta Standards Between the State of California and the Federal Government, December 15, 1994.

- Bay-Delta Advisory Council, Roster of Members, May 1995.

For information on the status and availability of a "Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary" contact:

State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100
(916) 657-2390

spress2--05/23/95

Draft 5/1

CALFED BAY-DELTA PROGRAM

Work Plan Elements

	CALFED Staff Role	*Interagency Staff Role*	*S.D. Contrt Consultant Role*	*N.D.Contrt Consultant Role*	*USBR Consultant Role*	*CALFED Consultant Role*	*CALFED Decision Point*	*Regular Schedule*	*Fast Track Schedule*	*Comments*
I. Problem Definition			main					Last 1/2 May	Last 1/2 May	
1. Review Existing Prob.Stmts	lead		contract					and June	and June	
2. Prepare Draft Elements	lead									
3. Conduct Workshop on Elements	assist	USBR								
4. Draft Stmt&Solicit Review Comments	lead									
5. Incorporate Review Comments in Second Draft Stmt.	lead	assist								
6. Facilitate Consensus Workshop on Problem Statement	assist	USBR					CALFED review, June Meeting			
7. Produce Final Statement	lead									
II. Develop Mission Statement			main					Last 1/2 May,		
1. Review Existing Mission Stmts	lead/		contract					June &July		
2. Prepare Draft Elements (Project Purposes, Objectives, and Criteria)	manage	assist								
3. Conduct Workshop on Elements										
4. Draft Stmt&Solicit Review Comments										
5. Incorporate Review Comments in Second Draft Stmt.										
6. Facilitate Consensus Workshop on Mission Statement							CALFED Approval Point July Meeting			
7. Produce Final Mission Statement										
III. CEQA/NEPA Scoping	manage	assist		alternate	main contract					
1. Prepare & Issue Notice of Intent/Prep.				contract				September		
2. Conduct Public Scoping Meetings (six around the state)		Alternate approach						thru		
3. Compile and Analyze Comments		USBR Staff manage								
4. Prepare Scoping Report								November		
IV. Develop Categories of Acceptable Solution Alternatives	manage	assist	main		main contract			August &	Last 1/2 May	Process Concurrent with
1. Review and Augment Existing Development of Categories			contract if starts before July		if starts in August			Sept.	& June	Mission Statement - also can Cut Two weeks off without Workshops
2. Prepare Proposed Categories										
3. Conduct Workshops on Categories										
4. Incorporate Workshop Comments										
5. Facilitate Consensus Workshop on Solution Categories										
7. Produce Final List of Solution Categories and Summary Doc.										

	CALFED Staff Role	Interageny Staff Role	S.D. Contrt Consultant Role	N.D.Contrt Consultant Role	USBR Consultant Role	CALFED Consultant Role	CALFED Decision Point	Regular Schedule	Fast Track Schedule	Comments
V. Formulate Themes 1. Prepare Proposed Themes 2. Conduct Workshops on Themes 3. Incorporate Workshop Comments 4. Facilitate Consensus Workshop on Solution Themes 5. Produce Final List of Solution Themes in a Summary Document	manage	assist	alternative contract main contr. if start in July	alternative contract	main contract if start in September		CALFED Approval	Last 1/2 Sept &Oct	July	Cut to 4 weeks with No workshops
VI. Develop Preliminary Alternatives 1. Prepare Proposed Alternatives 2. Conduct Workshops on Alternatives 3. Incorporate Workshop Comments 4. Facilitate Consensus Workshop on Solution Alternatives 5. Produce Final List of Preliminary Solution Alternatives in a Summary Document	manage	assist	alternate contract	alternative contract	main contract			Nov to Jan 1996	August& Last 1/2 Sept 1995	Cut to 6 weeks with No Workshops
VII. Prepare Cursory Analysis& Coarse Screening of Alternatives 1. Perform Analysis of Alternatives Sufficient for Screening 2. Screen Alter.against Coarse Criteria 3. Identify Deficiencies in Alternatives With Respect to Purposes and Objectives 4. Iterate Analysis and Screening As Required	manage	assist		alternate contract	main contract			Feb, March & April 1996	Last 1/2 Sept, Oct&Nov(1/2) 1995	Move forward by anticipating alternatives- early start on analysis in mid-July & Aug
VIII. Reformulate Alternatives as Required to Fulfill Project Purposes 1. Using Deficiency Analysis, Reformulate Balanced Alternatives 2. Screen Alternatives Against Coarse Criteria 3. Iterate Reformulation and Screening As Required 4. Rank Alternatives and Select Alternatives for Further Analysis	manage	assist		alternate contract	main contract		CALFED DECISION Point	April 1996	First 1/2 Nov 1995	

	CALFED Staff Role	Interageny Staff Role	S.D. Contrt Consultant Role	N.D.Contrt Consultant Role	USBR Consultant Role	CALFED Consultant Role	CALFED Decision Point	Regular Schedule	Fast Track Schedule	Comments
IX. Preliminary Analysis and Screening 1. Prepare Preliminary Level Analysis of Selected Alternatives a. Feasibility Analysis b. Prel. Modeling (hydrol.,hydrody,flood). c. Fish and Wildlife Studies d. Cost Estimates e. Environmental Assessment f. Fatal Flaw Analysis g. Institutional Arrangements 2. Screen Against Criteria 3. Iterate Reformulation as Required 4. Rank Alternatives by Criteria 5. Prepare Alternatives Report	manage	assist		alternate contract	main contract			April,May and 1/2 June 1996	Last 1/2 Nov and Dec 1995 + First 1/2 Jan 1996	Cut to 8 weeks by selecting only three alternatives in previous step and performing analysis in anticipation of the three alternatives which will be chosen
X. Develop Consensus around Short List of Alternatives 1. Conduct Workshops on Alternatives 2. Incorporate Workshop Comments 3. Facilitate Consensus Workshop on Solution Alternatives 4. Produce Final List of Alternatives in a Summary Document	manage	assist		alternate contract	main contract		CALFED DECISION Point	June and July 1996	Dec and Jan 1995-1996	
XI. Perform Detailed Analysis of Short List 1. Feasibility Analysis 2. Environmental Studies 3. Economic and Financial Studies 4. Risk Studies 5. Detailed Modelling 6. Demand Management 7. Energy Studies 8. Institutional Arrangements	manage	assist		alternate contract	main contract			Aug and Sept 1996	not needed	Not needed if cut to three alternatives above
XII. Develop Consensus around Preferred Alternative List 1. Conduct Consensus Workshops on Alternatives 2. Produce Consensus *Alternatives Report*	manage	assist		alternate contract	main contract		CALFED DECISION Point	Sept and Oct 1996	not needed	Not needed if cut to three alternatives above
XIII. CEQA/NEPA Documentation	manage	assist				main contract		1997 & 98	1996& 97	

ECONOMIC ANALYSIS OF THE SAN-FRANCISCO BAY-DELTA
COORDINATION MEETING

Date: Friday, June 9, 1995

Time: Optional Tour: 1:00-2:00pm
Meeting: 2:00-5:00pm

Location: North Bay Regional Water Treatment Plant, Fairfield, CA. 707-428-7680.

DRAFT AGENDA

TOUR

1:00-2:00	Tour of North Bay Regional Water Treatment Plant	Niles Fleege

MEETING

Facilitator		Chris Dumas
Recorder		Larry Dale
2:00-2:10	Welcome, Announcements, Agenda Changes, Introductions	Chris Dumas
2:10-2:30	CALFED and the CALFED Planning Process	Judy Kelly
2:30-3:30	Review and Assessment: The History of Economic Analysis in Bay-Delta Planning -- Successes? Failures? Lessons for CALFED?	Everyone
3:30-3:40	BREAK	
3:40-4:40	Brainstorming and Discussion: Key economic issues and questions to address within the Long Term Process? Scope and depth of economic analysis that would be useful to CALFED? Trade-offs between level of analysis and precision of analysis? Resources and data needed to achieve desired level of analysis?	Everyone
4:40-4:50	Bay-Delta Modeling Forum Meeting. - June 21	Jay Lund
4:50-5:00	Schedule Next Meeting ??	
5:00	Adjourn	

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4:50-5:00	Schedule Next Meeting ??	
5:00	Adjourn	

~ July 1995

CALIFORNIA BAY/DELTA ACCORDS: CONSENSUS WORKS

BACKGROUND: Last December, the "Club Fed" federal agencies (EPA, USBR, USFWS and NMFS), their State counterpart agencies, and representatives of the urban, agricultural and environmental stakeholder groups signed the historic Bay/Delta Accords that ended years of stalemate in California water policy. The Bay/Delta Accords agreed on interim water quality standards for the Bay/Delta estuary, established an Operations Group to coordinate real-time management of the water projects, created a "Category III" program to address non-flow factors affecting fisheries, and outlined a long-term process for planning California's water future.

RECENT DEVELOPMENTS: Although there have been a few troubling developments that continue to threaten the consensus process (notably, the push by some Central Valley agricultural interests in the House of Representatives for radical legislation rolling back the reforms of the CVPIA, and the recent lawsuit by certain San Joaquin water districts against the State Board's new standards), the results of the Bay/Delta Accords to date have been overwhelmingly positive. Highlights include:

- The State Water Resources Control Board conducted its state process and in May adopted a new final water quality plan reflecting the Accord. This final new plan ended a long period of State Board paralysis, which saw the withdrawal of two draft plans in 1988 and 1993.

- The Operations Group has already made significant improvements in the protection of fisheries resources through real-time monitoring and management of the water projects. For example, in June, the monitoring program indicated a large migration of the Sacramento splittail, a species proposed for listing under the ESA. Quick response by the Operations Group concluded that water project pumping could be reduced immediately for a period of three days, with corresponding increased pumping later in the summer during non-critical periods. The result was a successful splittail migration with no adverse impacts to project water supplies.

- An initial set of non-flow projects for immediate funding by the Category III process has been identified by a working group of stakeholders and agency personnel. These projects include new fish screens at critical diversions and restoration of spawning habitat in important upstream tributaries.

These accomplishments of the consensus process have not gone unnoticed by the interested public. For example, Standard & Poor's, which last year had sounded an alarm about the potential impact of continued water policy stalemate on municipal credit ratings in California, recently stated that the Bay/Delta Accords "....represent[] a major step in alleviating many of S&P's credit concerns...."(Credit Week Municipal, 02/27/95).

FOR FURTHER INFORMATION: Contact Patrick Wright at (415) 744-1024.

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*** ACTIVITY REPORT ***
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TRANSMISSION OK

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CONNECTION TEL	912022605711
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PAGES	2
RESULT	OK

FAX

TO	**Name**	Phil Metzger
	Organization	OW
	Mail Stop	
	Fax No.	202-260-5711
	Verification No.	202-260-5700
FROM	**Name**	Tom Hagler
	Address	**Office of Regional Counsel** **Region 9** **US Environmental Protection Agency** **75 Hawthorne Street** **San Francisco, CA 94105**
	Phone No.	**415-744-~~1080~~** 1375
	Fax No.	**415-744-1041**
DATE		07/07/95
NO. OF PAGES (including cover)		2
SUBJECT		Bay / Delta
NOTE		Phil - I also sent this to your box on Postman as "Browner. BR1" so you can edit it if you like.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

OCT 24 1995

James H. Lecky, Director
Protected Species Management Division
National Marine Fisheries Service
501 W. Ocean Blvd., Suite 4200
Long Beach, California 90802

Re: CALFED/Bay-Delta MOUs

Dear Jim:

I am enclosing the originals of 3 different MOUs, all having something to do with the CALFED or Bay/Delta processes. The other three agency representatives signed these MOUs at the meeting last Thursday. I'm asking that you or Hilda Diaz-Soltero sign these as soon as possible and send them back to me. These MOUs are:

(1) MOU setting up the structure for "Category III" activities in the immediate future. This MOU was completed last July, and the Federal family has been very slow in signing it.

(2) MOU establishing the "co-lead" status amongst the Federal agencies for the CALFED Bay Delta Program EIS/EIR. You have already seen this MOU a number of times, and we have incorporated everyone's comments into the final version.

(3) MOU between California and the Federal family articulating how we'll jointly oversee the CALFED Bay Delta Program EIS/EIR. It mainly serves as notice to the world that Lester Snow's group is taking the lead, with CALFED oversight. You have not seen this one before; I've reviewed it for EPA and Bill McDonald reviewed it for Interior, and we inserted some language qualifying our commitments. I think it should be all right with NMFS, but let me know soon if you have a problem with it.

That's about it. Call me at (415) 744-1375 if you have any questions. When you send these back to me, use the mail code "RC-2-3" and they will get to me more quickly.

Very truly yours,

Tom Hagler

Thomas M. Hagler
Assistant Regional Counsel

FILE: FAX 8/28/95

From: John Renning, USBR

Phone: (916) 979-2707
Fax: (916) 979-2494

Nearly Final Version

To: Gary Stern, National Marine Fisheries Service

Phone: (707) 578-7513
Fax: (707) 578-3435

Tom Hegler, Environmental Protection Agency

Phone: (415) 744-1375
Fax: (415) 744-1041

Mike Thabault, Fish and Wildlife Service

Phone: (916) 979-2752
Fax: (916) 979-2723

Bruce Herbold, Environmental Protection Agency

Fax: (916) 678-2846

Dale Hall, Fish and Wildlife Service

Fax: (503) 231-6243

Subject: Draft Statement for SWRCB Workshop on August 29

Remarks: Attached is the draft of the written statement for the August 29 workshop. There are still some "clean-up" things that need to be done concerning abreviations, etc. Please give any comments you may have by 4:30 today. I will shortly faxing out the oral statement. My phone and fax number are above.

Pages: Six, including cover sheet.

file: FWS822E

STATEMENT OF FEDERAL AGENCIES (CLUB FED)
STATE BOARD WORKSHOP ON DEVELOPMENT OF A WATER RIGHT DECISION
TO IMPLEMENT REQUIREMENTS FOR SAN FRANCISCO BAY/
SACRAMENTO-SAN JOAQUIN DELTA ESTUARY
AUGUST 29, 1995

This response to the issues in State Board's Notice of Public Workshop was jointly prepared by the Fish and Wildlife Service, Bureau of Reclamation, National Marine Fisheries Service and Environmental Protection Agency otherwise referred to as the Federal Ecosystem Directorate or by its acronym Club FED. Many of the issues are in areas where one or more of these agencies has exercised their statutory authority (usually pursuant to the Endangered Species Act or the Fish and Wildlife Coordination Act) and have prepared documents that define their position with respect to those issues. The following documents have defined the position of the Fish and Wildlife Service on some of these issues:

(1) October 15, 1991 Formal Consultation on the Friant Division Contract Renewals, Central Valley, California.

(2) February 12, 1993 Formal Endangered Species Act Consultation on Effects of Implementing Long-term Operational Criteria and Plan for Central Valley Project Reservoirs.

(3) November 4, 1994 Formal Endangered Species Consultation on the Environmental Protection Agency's Proposed Water Quality Standards for the San Francisco Bay/Sacramento-San Joaquin Rivers and Delta.

(4) March 6, 1995 Formal Consultation on Effects of Long-term Operation of the Central Valley Project and State Water Project on the Threatened Delta Smelt, Delta Smelt Critical Habitat, and Proposed Threatened Sacramento Splittail.

In addition, the Environmental Protection Agency discussed biological factors affecting the issues before the State Board in the preambles to its proposed water quality standards (59 F.R. 810 (January 6, 1994)) and final water quality standards (60 F.R. 4664 (January 24, 1995)).

In these responses, biological information that was used in developing these responses has been provided. We have given varying degrees of detail in response to the questions in the Notice of Public Workshop.

The following are the responses to the Key Issues and associated questions in the Notice:

(1) What is the status of efforts to achieve negotiated solutions to the water right issues associated with implementation of the Bay-Delta Plan?

Response: Club FED agencies have not been involved in any activities regarding negotiated solutions to these water rights issues.

(2) In the absence of a negotiated settlement, binding on all necessary parties and acceptable to the SWRCB, what process should be used to identify the responsibility of diverters from the San Joaquin watershed to meet water quality and flow requirements at Vernalis?

Question--Should other water users also be required to release or bypass

flows to meet requirements at Vernalis?

Response: The process must be consistent with California water law and the principles of western water law. The process must be fair and equitable to all concerned and particularly to all water right holders including the Central Valley Project and the State Water Project. To that end, all water rights in the San Joaquin watershed need to be considered and an unfair burden should not be placed on any one project or any particular grouping of water rights. The plan should consider the "ecological fair-share" approach where the standards are met considering environmental requirements and impacts on tributary streams, thereby providing environmental benefits for the mainstem of the San Joaquin River in a fair and equitable manner. The process could determine that certain groups or sizes of rights may not have any responsibility for Bay-Delta standards; however, the plan may define or redefine the availability of water under those rights.

Finally, we note that water quality at Vernalis is a function of both flow and non-flow issues, and we urge the State Board to continue their work with the Regional Board to reduce salt loadings in the lower San Joaquin River.

(3) **What specific San Joaquin River water quality or flow requirements should be used when determining upstream water users responsibilities to meet conditions at Vernalis?**

Response: The process, at the present, should assume the standards in the WQCP. Club FED recognizes that these standards may change or that factors occurring in the future may require federal agencies with statutory responsibility to direct changes in the operation of a particular project. However, we believe that at this point in time the effort needs to be focussed on the implementation of a given set of standards, not the development of a new set.

Biological Considerations: (1) Delta smelt adults migrate upstream to San Joaquin River and tributaries, and then spawn from December to July. In some years, a greater proportion of spawning happens on the San Joaquin River side and not the Sacramento River side. Flows to transport larvae and provide behavioral cues for out-migrating juveniles are necessary to move fish to suitable rearing habitat in Suisun Bay. Relatively high flows from April 1 to May 15 are necessary to assure the effectiveness of these San Joaquin River side flows in moving accumulated larvae and juveniles toward Suisun Bay. (2) Similar to delta smelt, Sacramento splittail adults migrate upstream from Suisun Bay rearing areas and starting in January and spawn in the San Joaquin River and tributaries from March through May. Flows to transport larvae and provide behavioral cues for out-migrating juveniles are necessary to move fish to suitable rearing habitat in Suisun Bay. Relatively high flows from April 1 to May 15 are necessary to assure the effectiveness of these San Joaquin River side flows in moving accumulated larvae and juveniles toward Suisun Bay. (3) chinook salmon adults migrate upstream in the fall to the San Joaquin river and tributaries to spawn. Attraction flows in october facilitate their upstream migration. In general, juvenile chinook salmon migrate downstream from the tributaries during the spring. During spring, low San Joaquin basin outflow and delta exports result in both direct and indirect mortality of out-migrating juvenile salmon. Conversely higher juvenile survival has been observed in years when spring flows in the mainstem San Joaquin and tributaries have been high. In summary, based on information gathered to date, increases to Vernalis flows identified in the Bay-Delta accord during the 30-day pulse will increase smolt survival and adult production (given that ocean survival is density independent) for San Joaquin basins chinook salmon. How much survival will increase is dependent upon the magnitude of increase compared to pre-pulse levels and the percentage of the population migrating during the 30-day pulse. The mechanisms behind the relationship of smolt

survival and escapement to flow at Vernalis and exports is likely due to: (1) the impact of flow on increased migration times through the delta, (2) decreased effectiveness of sight feeding predators and (3) reducing net flow towards the pumping plants. Consequently, improved spring flows will benefit these species. The Service has recommended in its March 6, 1995, biological opinion, two elements for minimum San Joaquin River flows from February 1 through June 30: (1) a component to net Delta outflow based on a historical ratios of inflows to outflows in all water year types to help maintain suitable rearing habitat associated with X2 in Suisun Bay; (2) an April-May pulse flow to transport larval and juvenile estuarine fish to suitable rearing habitat in Suisun Bay. The net Delta outflow component and the April-May pulse flow will also improve survival of downstream-migrating San Joaquin basin chinook salmon smolts, aid in the downstream transport of striped bass eggs and larvae, and benefit sturgeon and American shad. The october flow requirement at Vernalis will facilitate the upstream migration of adult chinook salmon.

> **Question-- What portion of these requirements should water users, in addition to the USBR, be required to meet as conditions of their water rights?**

Response: The identification of the requirements of other users should be done as part of an analytical process. The water supply, water development and water quality aspects of water in California may/will change in the future and will also change on an annual basis. The process must recognize this uncertainty and be flexible enough to accommodate it. The process and resulting plan must not be arbitrarily developed. It must follow from clearly defined technical studies that reflect the underlying legal principles and that can accommodate changes in its development and in the future, if necessary.

As stated above the process should be consistent with California water law and should consider an "ecological fair-share" approach that would reflect a widely shared responsibility for both salinity and flow requirements at Vernalis. There may be adverse environmental impacts in many years if responsibility is placed upon a single water rights holder (as it is now with Reclamation having that sole responsibility at New Melones). There will be times when (1) there will not be adequate amounts of water in New Melones to meet the standards; (2) using this water at one time of year will affect the supply available for other requirements, including fish and wildlife requirements, at other times of the year; and (3) will affect the amounts of water available for other beneficial uses. From a biological perspective flow is preferred over structural alternatives because of potential adverse effects on biological resources. However, under most conditions unlimited flow resources do not exist and careful consideration of both flow and structural alternatives needs to be made.

In using the "ecological fair-share" approach the State Board should consider the potential for maximizing conjunctive use of upstream user's flow contributions, consistent with sound ecosystem planning. For example, flows released by upstream users to help meet salinity and flow requirements at Vernalis, could have benefits for instream fish and wildlife resources as well. Club FED recognizes that the existing minimum instream flow requirements on San Joaquin basin tributary streams are inadequate to protect and maintain anadromous fish populations.

The Fish and Wildlife Service has made recommendations in other forums regarding alternative flow requirements that would protect and maintain aquatic resources. Reclamation and Fish and Wildlife Service are also in the process of developing the Anadromous Fish Restoration Program (AFRP) pursuant to the CVPIA to make all reasonable efforts to sustain natural production of anadromous fish in Central Valley rivers and streams at levels not less than

twice the average levels attained during the 1967-1991 period. The additional actions, including alternative flow requirements needed to double natural production of anadromous fish and improve habitat conditions in the Bay-Delta watershed will be discussed in response to issues 7 and 13. We will provide a status report on the AFRP and describe how flow requirements and other habitat restoration actions at sometime in the future.

Question-- Should the SWRCB require augmentation of these flows with a flow requirement based on the riparian and appropriative consumptive water needs in the southern Delta?

Response: If the State Board recognizes a flow requirement for the southern Delta it must be based upon principles in California water law and not be unreasonably imposed upon other water right holders. From a biological perspective any augmentation of San Joaquin River flows even based on riparian and appropriative water needs will have some benefits to fisheries.

Question-- What studies must be done to reevaluate those [fish] flows and what is the time frame for their completion?

Response: Several programs under the direction of (1) IEP, (2) CDFG, and (3) CVPIA have ongoing studies that should enable evaluation of baseline conditions of fish and wildlife resources. The IEP Is in the process of revising their studies to better evaluate the effects of the Bay-Delta accord on aquatic resources (including delta smelt, Sacramento splittail, and San Joaquin salmon). Part of these studies will address how flows from the San Joaquin river at Vernalis affect the distribution, abundance, and survival of target species. Other ongoing studies and estimates of annual escapement by other agencies should continue so that comparisons with past information is possible. The time frame for completion is unknown, although annual evaluation should be completed. For salmon, adults do not return until 2 to 3 years, making a longer time frame for complete evaluation necessary. CVPIA programs B1 and B16 have monitoring elements that will be useful in evaluating baseline conditions. Longer term studies will be necessary to determine the effects of implementation of standards. All of these flows improve Delta habitat suitability and help to offset the effects of the water projects and maintain a balanced ecosystem.

(4) What actions should be taken to achieve the salinity requirements in the southern Delta?

Response: The following actions can be undertaken, however some may have biological impacts that need to be addressed:

(a) Source management and reduction of saline flow into the San Joaquin River;

(b) Increased flows on the San Joaquin River;

(c) Increased flows from San Joaquin River tributaries and other eastside streams;

(d) Revised operations of the Delta Cross Channel gates.

The State Board will need to carefully address this issue to assure that the implementation plan to achieve the southern Delta salinity requirements is reasonable and fairly applied to all involved and is consistent with California water law.

(5) What actions should be taken to achieve the dissolved oxygen objective?

Response: To alleviate salmonid concerns from September through November,

should consider implementing the following measures:

(a) Regulate effluent discharged from the Stockton Wastewater Treatment Plant and other upstream discharges that contribute to the biochemical oxygen demand;

(b) Address flow augmentation in the San Joaquin River; and,

(c) Install a barrier at the head of Old River to increase flows in the San Joaquin River.

(d) Limit dredging in the San Joaquin River at Stockton to periods other than September through November.

Again, the State Board will need to carefully address this issue to assure that the implementation plan is reasonable and fairly applied to all involved and is consistent with California water law.

(6) Should the SWRCB require construction and operation of barriers in the southern Delta?

Response: EPA, both in its own water quality standards process and in its review of the State's standards, concluded that a barrier at the Old River is necessary to protect migrating salmon. Other barriers are not likely to have measurable fish benefits but may be needed to improve circulation for water levels and water quality. There are a number of alternative actions under review through the NEPA/CEQA process for the implementation of the South Delta Agreement. Club FED would recommend the State Board not address the issue of requiring construction of barriers until that process is complete. As you are aware, the South Delta Agreement does not focus on standards.

As you are aware, there are some significant federal/state legal issues that arise when state authorities direct or require federal agencies to undertake certain actions. Absent congressional authorization federal agencies may be unable meet such requirements.

Biological Considerations: Barriers effect Delta hydraulics and may adversely effect listed fish species. Barriers may also block upstream migrating adult fish and downstream movement of larvae and juveniles towards rearing habitat in Suisun Bay. The timing of barrier installation will determine the significance of the effects on these fish. Additionally, fish predators are attracted to in-water structures and may cause fish losses. Therefore, flows, exports and source reduction should be considered as part of the NEPA/CEQA process.

FILE: FAX 8/28/95a

From: John Renning, USBR

Phone: (916) 979-2707
Fax: (916) 979-2494

To: Gary Stern, National Marine Fisheries Service

Phone: (707) 578-7513
Fax: (707) 578-3435

Tom Hegler, Environmental Protection Agency

Phone: (415) 744-1375
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Mike Thabault, Fish and Wildlife Service

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Bruce Herbold, Environmental Protection Agency

Fax: (916) 678-2846

Dale Hall, Fish and Wildlife Service

Fax: (503) 231-6243

Subject: Draft Statement for SWRCB Workshop on August 29

Remarks: Attached is the draft of the oral statement for the August 29 workshop. Please give any comments you may have by 4:30 today. My phone and fax number are above.

Pages: Three, including cover sheet.

file: usbr822e

STATEMENT OF FEDERAL AGENCIES (CLUB FED)
STATE BOARD WORKSHOP ON DEVELOPMENT OF A WATER RIGHT DECISION
TO IMPLEMENT REQUIREMENTS FOR SAN FRANCISCO BAY/
SACRAMENTO-SAN JOAQUIN DELTA ESTUARY
AUGUST 29, 1995

Good Morning. I am Lowell Ploss, Operations Manager of the Central Valley Project Operations Office of the Bureau of Reclamation. I am speaking for Federal Ecosystem Directorate or Club FED, which is made up of Reclamation, the Fish and Wildlife Service, the National Marine Fisheries Service and the Environmental Protection Agency. Club FED was established to provide a coordinated federal effort on issues associated with the Delta and other water issues in California. With me today are Joel Medlin of the Fish and Wildlife Service, Gary Stern of the National Marine Fishery Service, and Patrick Wright of the Environmental Protection Agency.

My statement will be fairly general in nature and will not be offering many specific recommendations. However, I will submit a written statement that will contain more detailed recommendations. We have addressed the first six issues concerning the San Joaquin Basin that the notice requested be covered in this first workshop.

The task that the State Board has of developing a water right decision or plan to assign responsibility for implementing the Water Quality Control Plan recently adopted is a very important and significant one to all water interests in California. Club FED believes the implementation plan must include the following principles:

A. The plan must be consistent with California water law and the principles of western water law.

B. The plan must be fair and equitable to all concerned and particularly to all water right holders including the Central Valley Project and the State Water Project. To that end, all water rights in the Bay-Delta watershed need to be considered and that an unfair burden not be placed on any one project or any particular grouping of water rights. The plan could result in a determination that certain groups or sizes of rights would not have any responsibility for Bay-Delta standards; however, the plan may define or redefine the availability of water under those rights. We recommend that the State Board consider an "ecological fair-share" approach where the standards are met considering environmental requirements and impacts on tributary streams, thereby providing environmental benefits for the mainstem of the San Joaquin River in a fair and equitable manner. The process could determine that certain groups or sizes of rights may not have any responsibility for Bay-Delta standards; however, the plan may define or redefine the availability of water under those rights.

C. The plan must be developed as part of an analytical process. The water supply, water development and water quality aspects of water in California may/will change in the future and will also change on an annual basis. The implementation plan must recognize this uncertainty and be flexible enough to accommodate it. The plan must not be arbitrarily developed. It must follow from clearly defined technical studies that reflect the underlying legal principles and that can accommodate changes in its development and in the future, if necessary.

D. The process for developing the plan should assume the same standards in the WQCP. Club FED recognizes that these standards may change or that factors occurring in the future may require federal agencies with statutory responsibility to direct changes in the operation of an identified project. However, we believe that at this point in time the effort needs to be focussed on the implementation of a given set of standards, not the development of a new set.

E. The plan needs to include a determination of how to accommodate, in both a legal, technical, and environmental sense, other regulatory activities that are taking place, for example the FERC process that is occurring on several streams. In addition, there will be some interaction between operations of the CVP under CVPIA and the standards that are being met at that time. It is not clear yet how that interaction would be handled in studies for the implementation plan.

F. Physical solutions have the potential to achieve desired goals with lower water costs. A number of processes are underway that will attempt to identify and determine the feasibility of implementing physical solutions. The State Board process should be flexible enough to accommodate such solutions and to aid in analyzing alternative implementation plans with assumed physical solutions, however we do not recommend at this time that the State Board require physical solutions be constructed. There are number of legal issues concerning State Board mandated physical solutions. We will discuss them today but simply note that they exist.

G. Negotiated agreements have a potential for resolving some of the issues associated with the implementation plan. However we believe that such agreements will need to follow the principles that we have laid out here.

H. Though not one of the first six issues, we believe that workshops could be useful to this process. From the experience of the process following Phase 1 of these hearings some workshops/workgroups worked very well and some did not. Before establishing work groups, however, the State Board should review the groups currently in existence to determine if those groups can meet the needs identified. If an unmet need exists, then the State Board should take the lead in integrating and facilitating existing groups or establishing a new work group. Participation in these new work groups should consist of all of the stakeholders, similar to the Category III process.

We will pleased to answer any questions you may have. Either we or staff of our agencies will be here today for this workshop and will be at your future workshops.

ORC 2-3

TO: Tom Hagler
cube 16253

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 9

75 Hawthorne Street
San Francisco, CA 94105-3901

MEMORANDUM

TO: Bay-Delta Team (W-2-4)

FROM: Chris Dumas

DATE: Sept. 9, 1995

SUBJECT: OPPE Review of Bay-Delta Ecosystem Quality Definition Workshop

Recall that Region 9 received funding to sponsor a Bay-Delta Ecosystem Quality Definition Workshop through a grant from HQ under the "Community Based Environmental Protection" (CBEP) program. Bay-Delta is working with the Center for Sustainable Resource Development at U.C. Berkeley, the Bay Institute, and the Environmental Defence Fund to produce a series of two workshops, one on Oct. 28, 1995, and one in March 1996.

Janis Gomes says that Bill Painter and Lynn Fleckenstein (both under Wendy Hammett) of OPPE will be visiting Region 9 on Sept. 25 and 26 to discuss Region 9's CBEP Action Plan. Bay-Delta should do a "show and tell" on our planned Workshop series, perhaps inviting Prof. David Zilberman (510-642-6570) from U.C. Berkeley and Dr. Bill Alevison (415-721-7680) from the Bay Institute to participate.

If Dumas is not here, someone in Bay-Delta needs to coordinate with Janis Gomes (X1612) and organize the show and tell on Sept. 25/26.

Attachment: Community Based Environmental Protection EPA Region 9's Plan of Action

(SEPTEMBER 1995)

Community Based Environmental Protection
EPA Region 9's Plan Of Action

What is Community Based Environmental Protection (CBEP)?

The community based approach is a framework for identifying environmental problems, setting priorities for action, and forging solutions through an inclusive process driven by the needs of places, ecosystems, and the people who live in them. CBEP efforts share common attributes:

- Defined areas of priority focus (usually geographic),
- Collaborative efforts by agencies and local stakeholder groups in developing goals and implementing actions, and
- Holistic perspectives, acknowledging and addressing ecological, cross-media, and socio-economic interrelationships.
- A process for review and adaptation.

What Is EPA Region 9 Doing About It?

In many ways, the Region is already engaged in the CBEP approach (see examples on the back of this page). We are committed to using more of this approach where we can, which includes both regulatory and non-regulatory tools--to attain environmental management goals and address community and ecosystem needs. To accomplish this, in May 1995, Region 9 developed a CBEP Strategy with the following goals:

- Align EPA's internal planning, resource allocation, and training efforts to foster and support CBEP approaches,
- Build partnerships with state, tribal and territorial environmental agencies to focus resources on priority problem areas and implement holistic solutions, and
- Empower, inform, and equip local stakeholders to use holistic approaches tailored to local human and ecological community needs.

Region 9 will follow a step-by-step process in implementing the CBEP strategy. We want to build on our successes and learn from our mistakes as we embrace CBEP principles in our work. Beginning in 1995, Region 9 will:

- Target 10-20% of Regional resources to CBEP efforts, initially ensuring that existing CBEP projects receive adequate support (examples, on reverse side)
- Develop a CBEP project investment mix with the following EPA roles in mind--
  -10% as leader (e.g., provide leadership, organize, and guide the effort),
  -10% as partner (e.g., work side-by-side with other key stakeholders),
  -80% as enabler (e.g., build stakeholder capacity by providing training, technical assistance, seed money, etc., in places where our onsite participation is limited).
- Initiate extensive outreach and education activities within our office and with state and local stakeholder groups to build support for CBEP efforts,
- Develop training in key CBEP skill areas (e.g., community outreach and evaluating the full range of environmental concerns in a place), and
- Explore options for providing state, tribal, and local stakeholders flexibility in resource allocation and ways to achieve environmental goals.

(OVER)

Examples of Region 9 CBEP Efforts

EPA Region 9 is currently investing more than 10% of its staff resources and 12% of its grant resources to CBEP activities ranging from intensive EPA-led multimedia projects, to modest locally-led watershed projects partly supported by EPA grants. Here are a few examples.

Project & EPA Role	Description
San Francisco Bay Delta/ Central Valley Initiative (partner)	Geographic initiative involving WMD, ATD, OEA, & ORC to build agency/community partnerships, develop innovative solutions to water quality & pesticide use issues: - negotiate/promulgate water quality standards. - implement San Francisco Estuary Plan (CCMP). - develop innovative sustainable agric. approaches with the farm community. - preserve wetlands in S.F. Bay/Central Valley.
Environmental Justice Pilot Projects: West Oakland & Watsonville, CA (leader), SW Phoenix (enabler)	Multimedia assessment and planning project to identify and address environmental hazards in low income/minority communities: - assess environmental hazards in all media, from all sources. - involve community and local agencies in assessing hazards. - develop a plan for reducing hazards in community. - implement the plan, coordinating with federal, state, & local agencies where appropriate.
Brownfields Initiative: City of Sacramento (partner)	Initiative to overcome barriers to contaminated site restoration and redevelopment: - The City, regulatory agencies, PRPs, and the community will determine cleanup goals and appropriate future land uses. - Effort will leverage federal agency resources to promote economic development, job training, and community empowerment.
Oakland Redevelopment Project (leader)	EPA, City of Oakland, & local/state agencies are addressing expedited cleanup of UST & toxic sites. EPA is developing a prototype classification of hydrogeological zones, proposing cleanup levels for each class, & facilitating meetings between the City & other agencies to establish a risk-based cleanup process that will streamline remediation & promote site redevelopment.
MERIT Partnership (leader)	The MERIT Partnership is a voluntary program involving EPA, industry, and state & local regulatory agencies. MERIT's goal is to facilitate/ implement demo projects that reduce environmental impacts & make good business sense. Projects are evaluated by a community advisory panel & steering committee. Projects include those with the metal finishing & oil refinery industries, an industrial laundry, semi-conductor manufacturers, alternative fuel vehicle proponents, & a multi-industry initiative to address toxic spills.

For more information on Region 9's CBEP plans, call Janis Gomes at 415-744-1612.

September 28, 1995

Felicia Marcus, Regional Administrator
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, Ca. 94105-3901

Re: US EPA approval of 1995 Bay/Delta Plan

Dear Ms. Marcus,

In a letter dated September 26, 1995, the U.S. Environmental Protection Agency (EPA) formally approved the State Water Resources Control Board's 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta estuary (1995 Plan). In Attachment 1 to the approval letter, EPA also highlighted "certain assumptions and conclusions it made during its evaluation of the 1995 Bay/Delta Plan" as issues that should be considered during the Board's next triennial review. The Bay Institute of San Francisco offers the following brief comments on EPA's approval letter and Attachment 1.

First, we agree with EPA's comments in Attachment 1 on the effect of new Delta configurations on the adequacy of the 1995 Plan. We wish to emphasize that EPA's comments also apply to the effect of changes in baseline conditions, including export pumping levels, storage capacity and other major water project operational parameters, on the adequacy of the 1995 Plan. In discussing changes to Delta configurations, EPA acknowledges that certain baseline conditions were assumed in the modeling used to evaluate the environmental and water supply impacts of implementing the 1995 Plan. The Board, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service also relied on these assumptions in making their separate evaluations. We believe that this assumption should have been stated more explicitly as a separate issue for consideration. We

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recommend that EPA do so in an addendum to Attachment 1, or if and when it formally withdraws the federal standards.

Second, we are concerned that in Attachment 1 EPA failed to include among its list of issues for consideration during the next triennial review the need for numeric criteria and other measures to double natural production of chinook salmon. As a participant in the process that led to the signing of the Bay-Delta Accord, we are well aware of the importance of the narrative salmon doubling requirement in demonstrating to EPA that the state standards would afford a level of protection equivalent to EPA's cold freshwater habitat and fish migration criteria. Given the substantial evidence that the export criteria and operational requirements contained in the 1995 Plan will not in and of themselves result in doubling natural production of chinook salmon, it is necessary that the state establish a process to develop numeric criteria to achieve compliance with this standard for consideration and adoption during the next triennial review, and adopt other measures to achieve the standard. Protection of the designated/beneficial uses at risk will ultimately rely on the development of numerical criteria and other measures to achieve the narrative criterion. EPA's October 1992 Procedures For Initiating Narrative Biological Criteria call for data collection and measurement procedures as "an appropriate interim step for the eventual development of numeric biologic criteria." This interim step is not identified in the 1995 Plan, whereas interim steps for the development of numeric criteria for Suisun Bay brackish tidal marshes are included. We strongly urge that EPA publish an addendum to Attachment 1 to remedy the omission of this item, or address this concern if and when it formally withdraws the federal standards.

Third, we believe that EPA is wise to consider the potential effect of pending litigation on the implementation of the 1995 Plan. Having been involved in the lengthy process of developing statewide water quality objectives for toxic pollutants which were subsequently set aside in state court, we are also concerned that federal criteria for protecting water quality in the Bay/Delta estuary be available as a safety net should the state's Bay-Delta standards be invalidated. It would be truly tragic if, after ending years of stalemate on improved protection of the estuary with the signing of the Bay-Delta accord, a situation in which neither state nor federal protections were in effect became the end result. To avoid this possibility, we support a stay of the federal rule by EPA pending implementation of the 1995 Plan.

Thank you for your consideration of our thoughts on these matters.

Sincerely,

Gary Bobker
Policy Analyst

cc: P. Wright, T. Hagler, EPA
H. Candee, NRDC
T. Graff, EDF
C. Koehler, NHI

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

OCT 24 1995

James H. Lecky, Director
Protected Species Management Division
National Marine Fisheries Service
501 W. Ocean Blvd., Suite 4200
Long Beach, California 90802

Re: CALFED/Bay-Delta MOUs

Dear Jim:

I am enclosing the originals of 3 different MOUs, all having something to do with the CALFED or Bay/Delta processes. The other three agency representatives signed these MOUs at the meeting last Thursday. I'm asking that you or Hilda Diaz-Soltero sign these as soon as possible and send them back to me. These MOUs are:

(1) MOU setting up the structure for "Category III" activities in the immediate future. This MOU was completed last July, and the Federal family has been very slow in signing it.

(2) MOU establishing the "co-lead" status amongst the Federal agencies for the CALFED Bay Delta Program EIS/EIR. You have already seen this MOU a number of times, and we have incorporated everyone's comments into the final version.

(3) MOU between California and the Federal family articulating how we'll jointly oversee the CALFED Bay Delta Program EIS/EIR. It mainly serves as notice to the world that Lester Snow's group is taking the lead, with CALFED oversight. You have not seen this one before; I've reviewed it for EPA and Bill McDonald reviewed it for Interior, and we inserted some language qualifying our commitments. I think it should be all right with NMFS, but let me know soon if you have a problem with it.

That's about it. Call me at (415) 744-1375 if you have any questions. When you send these back to me, use the mail code "RC-2-3" and they will get to me more quickly.

Very truly yours,

Thomas M. Hagler
Assistant Regional Counsel

MEMORANDUM OF UNDERSTANDING
FOR PREPARATION OF
ENVIRONMENTAL IMPACT STATEMENT/REPORT
FOR
LONG-TERM IMPROVEMENTS TO THE BAY-DELTA ESTUARY

In 1992 the Governor of the State of California established by executive order the Water Policy Council. The Council, made up of representatives of the California Resources Agency, the California Environmental Protection Agency, the California Department of Fish and Game, the California Department of Water Resources, the California Department of Food and Agriculture, and the State Water Resources Control Board, coordinates the State's diverse roles affecting the resources of the Bay-Delta Estuary.

In 1994, the federal agencies established the Federal Ecosystem Directorate (Club FED). Club FED, made up of representatives of the United States Department of the Interior, the United States Environmental Protection Agency, and the United States Department of Commerce, coordinates the federal entities' activities affecting the resources of the Bay-Delta Estuary.

In July 1994, representatives of Club FED and the Water Policy Council entered into a Framework Agreement committing to work cooperatively to develop a long-term solution to the problems affecting the Bay-Delta Estuary. Exhibit C of the Framework Agreement provided for evaluation of solution alternatives pursuant to the National Environmental Policy Act (NEPA)(42 USC §§ 4321, et seq.) and the California Environmental Quality Act (CEQA) (Cal.Pub.Resources Code §§ 21000 et seq.).

Club FED and the Water Policy Council established the CALFED Bay-Delta Program as the comprehensive, long-term planning effort to address the resource problems of the Delta, and to identify and evaluate potential solutions to those problems. In addition, they have provided an interagency team to carry out the Program under CALFED's general direction. Finally, the Department of the Interior and the Governor established the Bay Delta Advisory Council (BDAC) to provide public review and comment to the CALFED Bay-Delta Program.

This memorandum of understanding (MOU) describes the roles of each federal and State entity in assisting the CALFED Bay-Delta Program in carrying out an environmental evaluation pursuant to NEPA and CEQA of the long-term solutions to the Delta resource problems.

Delegation of Responsibilities to Interagency Team

The federal and State governments intend to coordinate preparation of a single environmental document that satisfies both NEPA and CEQA. The parties agree to support that process in an effort to assure the accuracy and completeness of such a document, and compliance with both state and federal entities' obligations under NEPA and CEQA. The parties further agree that successful preparation of a joint environmental impact statement (EIS) and environmental impact report (EIR) requires coordination and communication between all parties involved. To the maximum extent practicable under law and consistent with agency policy, all parties agree to share all relevant information in a timely manner.

The parties agree that the CALFED Bay-Delta Program interagency team will be responsible for preparation of the EIS/EIR under CALFED's general direction. The CALFED Bay-Delta Program interagency team in consultation with the lead federal and state agencies, will prepare and circulate the Notice of Intent and the Notice of Preparation pursuant to NEPA and CEQA. Additionally, the CALFED Bay-Delta Program interagency team, in consultation with the federal and state agencies, will determine the organization, scope and content of the NEPA and CEQA documents to ensure that the requirements of federal and state laws are satisfied.

The CALFED Bay-Delta Program interagency team will also be responsible for planning and conducting the public participation activities required under both statutes. To that end, the CALFED Bay-Delta Program interagency team shall conduct noticed public hearings in order to obtain comments on the draft EIS/EIR from all public agencies (including those party to this agreement) and from the general public. Such public hearings shall be held using procedures identified in NEPA and CEQA.

The CALFED Bay-Delta Program interagency team will provide notice of all meetings and events associated with the EIS/EIR to each of the signatories hereto. The CALFED Bay-Delta Program interagency team will furnish copies of all relevant documents as promptly as possible for purposes of state and federal agency review, evaluation and approval. The CALFED Bay-Delta Program interagency team will brief CALFED on its activities and progress in furtherance of producing a comprehensive programmatic EIS/EIR.

Commitments

A. United States - Pursuant to 40 C.F.R. §1501.5, USFWS, NMFS, USBR, and EPA will serve as co-lead agencies for NEPA purposes. Other federal agencies may serve as cooperating agencies pursuant to §1501.6. MOUs between the co-lead agencies and each cooperating agency will be entered into to define each cooperating

agency's responsibilities. Each entities' commitments to this process are described below.

1. The United States Fish and Wildlife Service (USFWS) shall:

a. designate an individual to serve as liaison for matters related to the CALFED Bay-Delta Program. USFWS shall notify the CALFED Bay-Delta Program Manager of the designee, and of any changes in representation.

b. assure USFWS representation at CALFED Bay-Delta Program Coordination Team meetings, or other interagency group meetings, workshops, public hearings, etc.

c. provide prompt technical assistance, review and comment of EIS/EIR related documents. Provide expertise, guidance, and summary data regarding federally-listed threatened and endangered species, general fish and wildlife population status and related resource issues for which USFWS is directly responsible.

d. Provide support to the EIS/EIR development through contribution of staff time, information and facilities when possible.

2. The National Marine Fisheries Service (NFMS) shall:

a. designate an individual to serve as liaison for matters related to the CALFED Bay-Delta Program. NMFS shall notify the CALFED Bay-Delta Program Manager of the designee, and of any changes in representation.

b. assure NMFS representation at CALFED Bay-Delta Program Coordination Team meetings, or other interagency group meetings, workshops, public hearings, etc.

c. provide prompt technical assistance, review and comment of EIS/EIR related documents. Provide expertise, guidance, and summary data regarding federally-listed threatened and endangered species, general fish and wildlife population status and related resource issues for which NMFS is directly responsible.

d. Provide support to the EIS/EIR development through contribution of staff time, information and facilities when possible.

3. The United States Bureau of Reclamation (USBR) shall:

a. designate an individual to serve as liaison for matters related to the CALFED Bay-Delta Program. USBR shall notify the CALFED Bay-Delta Program Manager of the designee, and of any changes in representation.

b. assure USBR representation at CALFED Bay-Delta Program Coordination Team meetings, or other interagency group meetings, workshops, public hearings, etc.

c. provide prompt technical assistance, review and comment of EIS/EIR related documents. Provide expertise, guidance and summary data in those matters for which USBR is directly responsible, such as management of the Central Valley Project, etc.

d. Provide support to the EIS/EIR development through contribution of staff time, information and facilities when possible.

4. The United States Environmental Protection Agency (EPA) shall:

a. designate an individual to serve as liaison for matters related to the CALFED Bay-Delta Program. EPA shall notify the CALFED Bay-Delta Program Manager of the designee, and of any changes in representation.

b. assure EPA representation at CALFED Bay-Delta Program Coordination Team meetings, or other interagency group meetings, workshops, public hearings, etc.

c. provide prompt technical assistance, review and comment of EIS/EIR related documents. Provide expertise, guidance, and summary data in those matters for which EPA is directly responsible.

d. Provide support to the EIS/EIR development through contribution of staff time, information and facilities when possible.

B. California - Pursuant to 14 CCR § 15050 the Resources Agency will serve as the lead agency for CEQA purposes. The California Environmental Protection Agency, the Department of Fish and Game, Department of Water Resources, and the State Water Resources Control Board will serve as responsible agencies. Each entities' commitments to this process are described below.

1. The California Resources Agency (Resources) shall:

a. designate an individual to serve as liaison for matters related to the CALFED Bay-Delta Program. Resources shall notify the CALFED Bay-Delta Program Manager of the designee, and of any changes in representation.

b. provide prompt technical assistance, review and comment of EIS/EIR related documents.

c. Provide support to the EIS/EIR development through contribution of staff time, information and facilities when

possible.

2. The California Department of Fish and Game (DFG) shall:

a. designate an individual to serve as liaison for matters related to the CALFED Bay-Delta Program. DFG shall notify the CALFED Bay-Delta Program Manager of the designee, and of any changes in representation.

b. assure DFG representation at CALFED Bay-Delta Program Coordination Team meetings, or other interagency group meetings, workshops, public hearings, etc.

c. provide prompt technical assistance, review and comment of EIS/EIR related documents. Provide expertise, guidance, and summary data regarding state-listed endangered and threatened species, general fish and wildlife population status and related resource issues for which DFG is directly responsible.

d. Provide support to the EIS/EIR development through contribution of staff time, information and facilities when possible.

3. The California Department of Water Resources (DWR) shall:

a. designate an individual to serve as liaison for matters related to the CALFED Bay-Delta Program. DWR shall notify the CALFED Bay-Delta Program Manager of the designee, and of any changes in representation.

b. assure DWR representation at CALFED Bay-Delta Program Coordination Team meetings, or other interagency group meetings, workshops, public hearings, etc.

c. provide prompt technical assistance, review and comment of EIS/EIR related documents. Provide expertise, guidance, and summary data in those matters for which DWR is directly responsible, such as planning for California's future water needs, etc.

d. Provide support to the EIS/EIR development through contribution of staff time, information and facilities when possible.

4. The California Environmental Protection Agency (Cal EPA) shall:

a. designate an individual to serve as liaison for matters related to the CALFED Bay-Delta Program. Cal EPA shall notify the CALFED Bay-Delta Program Manager of the designee, and of any changes in representation.

b. provide prompt technical assistance, review and

comment of EIS/EIR related documents.

c. Provide support to the EIS/EIR development through contribution of staff time, information and facilities when possible. Provide expertise, guidance and summary data in those matters for which SWRCB is directly responsible.

5. The State Water Resources Control Board (SWRCB) shall:

a. designate an individual to serve as liaison for matters related to the CALFED Bay-Delta Program. SWRCB shall notify the CALFED Bay-Delta Program Manager of the designee, and of any changes in representation.

b. provide prompt technical assistance, review and comment of EIS/EIR related documents.

c. Provide support to the EIS/EIR development through contribution of staff time, information and facilities when possible. Provide expertise, guidance and summary data in those matters for which SWRCB is directly responsible.

Modification of the MOU

This MOU may be modified by written agreement of all of the signatories hereto.

Disclaimer

Nothing in this MOU shall amend, abridge, or in any way alter the responsibilities of any state or federal agency signatory hereto. For example, public hearings on permit decisions shall be conducted separately by each party to this agreement according to that agency's own rules and regulations.

It is understood by the parties that this is neither a contractual agreement nor a delegation of their responsibilities. The purpose of this MOU is to clarify an agreed-upon cooperative process to produce a joint document pursuant to NEPA and CEQA.

It is agreed by the parties that their obligations hereunder are contingent upon the availability of appropriations from Congress for the federal agencies and the California legislature for the State agencies.

Duration of the MOU

This MOU shall become effective upon signature of all of the parties listed below. Any party may withdraw from this MOU after

giving thirty (30) days advance written notice to all of the other signatories hereto, and may proceed independently pursuant to NEPA and CEQA.

Signed and Dated:

U.S. Fish and Wildlife Service	Date 10/19/95
National Marine Fisheries Service	Date 11 Dec 95
U.S. Environmental Protection Agency	Date 10/19/95
U.S. Bureau of Reclamation	Date 10/19/95
California Resources Agency	Date 10-19-95
California Environmental Protection Agency	Date
California Department of Fish and Game	Date 10/19/95
California Department of Water Resources	Date 10/19/95
State Water Resources Control Board	Date

MEMORANDUM OF UNDERSTANDING REGARDING SHORT-TERM CATEGORY III ACTIVITIES

WHEREAS, representatives of the State and Federal governments and the urban, agricultural and environmental communities agreed, on December 15, 1994, to a statement of "Principles for Agreement on Bay-Delta Standards" (the "Statement of Principles"), which Statement includes the implementation of so-called "Category III measures"; and

WHEREAS, the Statement of Principles commits the State and Federal Governments and agricultural, urban and environmental interests to the implementation and financing of Category III measures (estimated to require a financial commitment of Sixty Million Dollars ($60,000,000) per year) as an essential part of a comprehensive ecosystem protection plan for the Bay-Delta; and

WHEREAS, the program of Category III measures is focused upon improving specific non-outflow-related factors including, but not limited to: unscreened water diversions in the Sacramento-San Joaquin Delta Estuary ("Bay Delta"), along the Sacramento and San Joaquin Rivers and other locations; waste discharge control and pollution prevention; legal fishing (sport and commercial); illegal fishing (poaching); land-derived salts; exotic species; riparian, wetland and estuarine habitat restoration; and Delta channel alterations/local land-use modifications; and

WHEREAS, the Statement of Principles provides that the water user community agrees to make available an initial financial commitment of ten million dollars ($10,000,000) annually for three years towards funding Category III activities, and the Metropolitan Water District of Southern California agreed to guarantee the initial annual financial commitment for water user funding of Category III activities described in the Statement of Principles; and

WHEREAS, it was agreed in the Statement of Principles for Implementation of Category III that urban and agricultural water suppliers will work with State and Federal agencies and environmental interests concerned with the Bay-Delta in an open process to determine precise priorities and financial commitments for the implementation of all Category III activities; and

WHEREAS, the urban, agricultural and environmental parties to this Memorandum of Understanding wish to provide for an interim mechanism that will develop and recommend a permanent structure for their participation in the management of the Category III program, that will provide for coordination with the State and Federal government parties to this Memorandum of Understanding, and that will provide a mechanism that will hold and disburse initial commitments of Category III funds until the permanent structure can be developed and implemented.

NOW, THEREFORE, IT IS AGREED by the undersigned that:

1. On February 15, 1995, the Metropolitan Water District of Southern California deposited Ten Million Dollars ($10,000,000.00) for the exclusive purpose of funding Category III measures, as an initial contribution towards a fund established for the purpose of funding Category III measures.

2. Subject to the availability of necessary appropriations or approvals, the urban, agricultural, and environmental parties to this Memorandum of Understanding may (but are not obligated to) contribute additional initial financing for Category III activities, (1) by contributing to a Category III fund established for that purpose , or (2) by funding specific Category III projects approved by the Steering Committee described hereinafter. Subject to the availability of necessary appropriations or approvals, State and Federal government parties to this Memorandum of Understanding may assist in funding Category III activities by funding specific Category III projects identified by the Steering Committee in consultation with CALFED. The Steering Committee (or its successor once a mechanism for long-term implementation is established) will develop a process for crediting all initial contributions made pursuant to paragraph 1 and this paragraph toward longer-term Category III financial responsibilities.

3. The Metropolitan Water District of Southern California ("Metropolitan") shall act as Treasurer of the Category III Fund pursuant to the terms of this Memorandum of Understanding unless and until replaced by another party or until termination of this Memorandum of Understanding. For this purpose, Metropolitan shall maintain a separate account designated as the "Category III Fund, " which account shall be open for inspection upon reasonable notice by any of the signatories of this Memorandum. The Category III Fund shall be held in an account maintained with Metropolitan's regular and usual financial institution for such purposes.

4. An interim Category III Steering Committee ("Steering Committee") shall be established upon completion of the Category III Implementation Plan. The Steering Committee shall reflect the interests of each of the following groups: the environmental community, with a total of two representatives; the fishing community, with a total of two representatives; and the Ag/Urban community, with a total of four representatives. Each group shall separately be responsible on an ongoing basis for determining the composition of its representation on the Steering Committee. CALFED will appoint a total of six individuals to serve as liaisons with the Steering Committee. The Steering Committee, in consultation with the CALFED liaisons, shall identify and prioritize Category III measures. The Steering Committee shall have the power to develop and recommend a permanent institutional framework for the urban, agricultural and environmental parties' implementation of the Category III program. It also shall have the power to carry out the urban, agricultural and environmental parties' duties under the Category III Implementation Plan in the interim, including the power to approve Category III measures pending the establishment of a permanent institutional framework and to determine whether urban, agricultural and environmental parties' funds will be committed for the implementation of such projects. The Steering Committee shall reach decisions that reflect the consensus of all its members.

5. To facilitate the carrying out of its responsibilities, the Steering Committee shall form an Advisory Committee. The Advisory Committee shall be broad based, comprised of individuals possessing specialized knowledge of the Bay-Delta including its hydrology and its aquatic resources. The Advisory Committee is intended to recommend, subject to Steering Committee concurrence, expenditures from the Category III Fund for early implementation of projects.

6. The urban, agricultural and environmental parties hereto, in cooperation with the State and Federal governments and other interested parties, intend to promptly

establish a permanent mechanism to manage the urban, agricultural and environmental parties' participation in Category III programs on a long-term basis. Accordingly, it is anticipated that the administrative mechanism provided herein will be superseded by an alternative administrative mechanism intended to operate over the longer term. The Steering Committee provided for herein shall have the power to transfer funds collected hereunder to such administrative mechanism.

7. Category III funding issues will be addressed by a policy-level sub-committee convened expressly for that purpose. Among other things, this sub-committee shall address the identification of incentives to contribute to the Category III Fund established by Metropolitan and the development of mechanisms to allocate Category III funding responsibilities. The Steering Committee and/or the long-term Category III structure will be guided by the policy sub-Committee's resolution of these issues.

8. Participation in this Memorandum of Understanding is on a voluntary basis. Participation in activities pursuant to this Memorandum is not, nor may it be construed to be an admission of responsibility or liability for protection measures in the Bay-Delta system. Further, participation by an agency shall not be precedence for compelling participation in Bay-Delta protection activities.

9. Participation in this Memorandum of Understanding shall not confer jurisdiction or enforceability to any person or agency over any signatory. The parties have entered into it voluntarily and no rights to any other person or agency are accorded by participation in the Memorandum.

This Memorandum of Understanding shall remain in full force and effect until superseded by the long-term arrangement referred to in paragraph 6. Any party wishing to terminate their participation in the Memorandum may do so by providing written notice to all of the undersigned parties or their attorneys, upon which time the Memorandum will have no further force or effect as to that party. Termination by any one party shall not invalidate this Memorandum as to any party not tendering its own independent notice of termination.

(Signatures to be attached)

For Signature --

A Dale Hall — 10/19/95

for Regional Director
United States Fish and Wildlife Service — Dated

Linda Lay-Jones — 11 Dec 95

Regional Director
National Marine Fisheries Service — Dated

Felicia Marcus — 10/19/95

Regional Administrator
Environmental Protection Agency — Dated

Ronald K Patterson — 10/19/95

Regional Director
United States Bureau of Reclamation — Dated

MEMORANDUM OF UNDERSTANDING ON THE DEVELOPMENT OF AN ENVIRONMENTAL IMPACT STATEMENT ON THE CALFED BAY-DELTA PROGRAM AMONG UNITED STATES FISH AND WILDLIFE SERVICE, NATIONAL MARINE FISHERIES SERVICE, UNITED STATES BUREAU OF RECLAMATION, AND UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BACKGROUND

In July 1994, a Framework Agreement Between the Governor's Water Policy Council of the State of California and the Federal Ecosystem Directorate (the "Framework Agreement") was executed by representatives of the United States Department of the Interior, the United States Environmental Protection Agency, the United States Department of Commerce, and counterpart entities within the State of California. The Framework Agreement committed the signatories to work together in a joint process to develop a long-term solution for the problems affecting public values in the Bay-Delta Estuary. Exhibit C of the Framework Agreement provides that the evaluation of specific solution alternatives will be carried out through a formal California Environmental Quality Act ("CEQA")/National Environmental Policy Act ("NEPA") process conducted by one or more agencies.

Pursuant to the commitments in the Framework Agreement, the Federal government and the State of California have established the CALFED Bay-Delta Program as the comprehensive, long-term planning effort to address Bay-Delta water resource issues, and have provided an interagency team to carry out the Program under CALFED's general direction. In addition, the Bay-Delta Advisory Committee ("BDAC") has been established by the Department of the Interior under the Federal Advisory Committee Act to serve as a citizen advisory committee providing public comment to the CALFED Bay-Delta Program.

The United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), United States Bureau of Reclamation (USBR) and United States Environmental Protection Agency (EPA) now desire to establish in this Memorandum of Understanding ("MOU") an interagency process for managing and overseeing the Federal government's participation in the CALFED Bay-Delta Program and in the NEPA analysis which will be carried out as part of that Program.

AGREEMENT

A. Administration of NEPA Process

1. USFWS, NMFS, USBR and EPA will serve as co-lead agencies pursuant to 40 C.F.R. §1501.5. Other Federal agencies may request to participate in the CALFED Bay-Delta Program NEPA process as cooperating agencies under §1501.6. Any such participation will commence upon the execution of a Memorandum of Agreement between the lead agencies and the cooperating agency providing for the scope and nature of the participation.

2. The USBR shall coordinate compliance with the procedural requirements of NEPA, including the circulation of the environmental impact statement ("EIS") under 40 C.F.R. §1502.19, the filing of the EIS under 40 C.F.R. §1506.9, and the preparation and publication in the Federal Register of all notices required under the regulations.

3. The parties will use the CALFED Bay Delta Program interagency team to carry out all aspects of the NEPA process on their behalf, and at their general direction, and to ccordinate the NEPA process with the state's CEQA process.

B. Decision Making by Federal Agencies

1. Subject to paragraph E.1, below, the parties intend that all Federal decisions involving the CALFED Bay-Delta Program and related NEPA analysis will be made through a consensus process within the Federal Ecosystem Directorate ("FED").

2. Actions or decisions by the FED on issues involving the CALFED Bay-Delta Program shall be communicated, in writing as appropriate, to the Executive Director of the Program and, where appropriate, to the representatives of the State of California through the CALFED process.

C. Funding

1. The parties agree that the Department of the Interior signatory agencies will coordinate to develop annual budget requests on a single line item basis to identify and secure the financial resources necessary to fund the Federal government's participation in the CALFED Bay-Delta Program. It is acknowledged that each agency's financial contribution is contingent upon adequate appropriations from Congress.

D. Coordination with the State of California

1. As provided in the Framework Agreement and in accordance with 40 C.F.R. §1506.2, the parties propose to coordinate preparation of a single environmental document that satisfies both NEPA and CEQA. This coordination will occur primarily through the

efforts of the CALFED Bay-Delta Program interagency team, but may also require the direct involvement of the parties.

2. The parties envision that the Federal agencies will expeditiously prepare and execute an agreement with the Resources Agency of the State of California to provide for the joint management of the CALFED Bay-Delta Program's NEPA/CEQA process utilizing the Program's interagency team.

E. Related Authorities

1. Nothing in this MOU shall abridge or amend any responsibilities of any of the signatory agencies under any Federal laws or regulations, including, but not limited to, the Clean Water Act, Section 309 of the Clean Air Act, the Fish and Wildlife Coordination Act, the Endangered Species Act, or the Central Valley Project Improvement Act.

F. Modification or Termination of Agreement

1. This MOU may be modified by the parties hereto only with the mutual written agreement of all of the parties.

2. Any party to this MOU may terminate its participation in the preparation of the CALFED Bay-Delta Program NEPA document upon written notice to the other signatories. Termination by one party of its involvement in this MOU shall not terminate or affect the relationship between the remaining MOU signatories.

G. Effective Date

1. This MOU shall become effective upon its execution by all of the signatory parties below.

for A. Dale Hall — 10/19/95
Regional Director — Dated
United States Fish and Wildlife Service

Rolland Schmitten — 11 Dec 95
Regional Director — Dated
National Marine Fisheries Service

Felicia Marcus — 10/19/95
Regional Administrator — Dated
Environmental Protection Agency

Roger K. Patterson — 10/19/95
Regional Director — Dated
United States Bureau of Reclamation